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HISTORY OF REGIONAL ANESTHESIA IN UROLOGY *

HERMON C. BUMPUS, JR., M.D.

ROCHESTER, MINN.

The anatomic structure and innervation of the urinary tract lends itself so readily to the application of regional anesthesia that the history of anesthesia in urology becomes necessarily the history of the development of regional anesthesia. In fact, some of the various forms of regional anesthesia were first employed in the treatment of urologic diseases.

As in the case of ether, so with regional anesthetics the discovery of its anesthetic properties occurred many years before they were applied in medicine because those making the discovery did not appreciate the importance of it.

In prehistoric times the natives of Peru were cognizant of the anesthetic qualities in coca leaves; they were chewed and the saliva was allowed to run into the incision while the famous trephine operations were being performed.

Schezer obtained some of these when on his scientific voyage around the world in the Austrian frigate *Novar,* and observed that the leaves numbed the tongue when chewed. Gadecke, in 1855, isolated the alkaloid of the leaves and named it erythroylin. Nieman, in 1860, again obtained the alkaloid from them in a pure form, which he named cocaine, and also reported the numbing effect of this drug on the tongue; but no attention was paid to these discoveries. Indeed, Bennett, in 1874, demonstrated anesthetic properties of the drug without exciting notice, and four years later van Anrep, after making a thorough investigation of the drug, could not arouse any interest in it, although he injected it hypodermically into himself and, after noting that anesthesia lasted thirty-five minutes, suggested that it might be used as an anesthetic for surgical purposes. In fact, in 1880, a British medical commission, investigating the drug, reported that it had no medical value and was a poor substitute for caffeine.

It remained for Koller, a Bohemian serving as an intern on the staff of the Allgemeines Krankenhaus in Vienna, to convince the world of the value of cocaine. Realizing the disadvantages of a general anesthetic, he felt sure if he could find a suitable local anesthetic he would obtain one of the much coveted positions of assistant on one of the large hospital services. Like so many before him, he tried out all the central acting drugs such as morphine, and bromide, to see if they had any local action, only to meet with failure. Discouraged, he abandoned his search, but several months later Freud asked him to assist him in the study of the physiologic action of cocaine.

Koller, on tasting the drug and feeling its numbing effect on his tongue, at once realized its possibilities. He said: "When in the course of preparing for these physiologic experiments for Dr. Freud I realized that I had in my possession the local anesthetic which I had been previously searching for, I went at once to Stricker's laboratory, made a solution of cocaine, and instilled a drop in the eye of a frog and afterward of a guinea-pig. I found the cornea and conjunctiva anesthetic, that is, insensitive to mechanical, chemical, thermic and faradic stimulation afterward. I repeated these experiments on myself, some colleagues, and many patients." Koller made his preliminary report, Sept. 15, 1884.

In 1885, the *New York Medical Journal* alone contained twenty-eight separate articles and several editorials on the use of cocaine, among which was a report by Bartlett of litholapaxy after the injection of 3 drachms of a 4 per cent solution into the bladder. On the day he performed this operation, Feb. 5, 1885, he received the January 17 number of the *Lancet* and learned that the same procedure had been carried on successfully at St. Peter's Hospital in London the month before.

A French surgeon, Reclus, must be given credit for making any extended use of injections of cocaine for local anesthesia, employing it in a large variety of genito-urinary cases. He at first used a 5 per cent solution, later a 1 per cent solution, and finally recommended a 0.5 per cent solution. He performed internal urethrotomy many times after injecting the urethra with a 1 per cent solution.

Corning, in 1887, originated regional anesthesia by injecting around the nervus cutaneus antibrachii and producing anesthesia of the skin supplied by it. Little attention was paid to this method until 1890, when Oberst and Pernice rendered a finger anesthetic by injecting around the nerves at the base.

Following this, Schleich of Berlin, in July, 1892, at the German Congress of Surgeons, demonstrated a new method of producing anesthesia by the use of intracutaneous (rather than subcutaneous) injections of very dilute solutions of various drugs, including cocaine. He termed this method "infiltration anesthesia."

The method was put to practical test by American surgeons, and Würdemann reported on the subject in 1894. Following this Bransford Lewis, in 1896, wrote: "I have made use of the infiltration method in operat-

* From the Section on Urology, the Mayo Clinic.

* Chairman's address, read before the Section on Urology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

ing on buboes; in opening a prostatic abscess through the perineum; in circumcisions; perineal urethrotomy, hydrocele, hernia, and other procedures connected with genito-urinary surgery."

Braun, in 1897, reported the induction of local anesthesia by employing cocaine in operations for phimosis and was first to call attention to the fact that the toxicity of the drug was in direct ratio to its rate of absorption and that the efficiency of it was in reverse ratio. He therefore advocated the addition of epinephrine to decrease the rate of absorption and increase the duration of anesthesia.

Braun, in 1905, published a textbook on local anesthesia, giving detailed descriptions of technic for every region, which probably did more than any one thing to stimulate the development of local anesthesia.

SPINAL ANESTHESIA

The year following Koller's report, Corning of New York, using what he termed "a procedure in therapy which possesses the merit of novelty," attempted to produce spinal anesthesia. In an article published in October, 1885, entitled "Spinal Anesthesia and Local Medication of the Cord," he stated: "As the introduction of a hypodermic needle beneath the membranes of the medulla spinalis is not practicable without the removal of the arches of the vertebrae (on account of the dangers of wounding the cord) I decided to inject the anesthetic between the spinous processes of the lower dorsal vertebrae. . . . I was bent upon abolishing reflex action and annulling sensory conduction in the cord." Anesthesia of the legs and genitalia resulted and a sound was passed painlessly through the urethra. In concluding his report, he wrote: "Whether the method will ever find an application as a substitute for etherization in genito-urinary surgery further experience alone can show."

Because it was soon discovered that cocaine in doses greater than one-half grain was too dangerous for general use, the method was not generally adopted and, strange as it may seem, fifteen years was to pass before the surgical possibilities of spinal anesthesia were demonstrated clinically by Bier, in 1898. In the interim, Quincke, in 1891, demonstrated the utility of the lumbar puncture and showed that the introduction of a needle through the dura was feasible. So Bier, after experimenting on animals, had his own spinal canal and that of his associate Hildebrand injected with solutions of cocaine in 1898.

Tuffier, in 1900, reported eighty cases in which he had induced anesthesia by injecting between the third and fourth lumbar spaces; many of the operations were on the genito-urinary tract. He was so pleased with the results that he suggested the possibility of using the method for renal surgery by injecting higher in the cord.

Jones in Liverpool read a paper on the subject in 1904, and the method was rapidly taken up by the surgeons in both Europe and America. The method became so popular and was used so unwisely at times that Bier, who was chiefly responsible for its introduction, felt called on to give a warning against its too extensive use. Later, realizing its deleterious effects, he decided to abandon it and to wait for the discovery of some less toxic drug.

In the meantime chemical relatives of cocaine of less toxicity were being searched for. Giesel, in 1891, had isolated tropacocaine. Following its advocacy by Schwartz, many German surgeons employed it and in that country it remained popular for many years. Fournier, in 1903, brought out stovaine, which was adopted by Bier and became used generally throughout England and France. In Germany, Einhorn, in 1904, discovered procaine (novocaine). In America, Adams developed butyn and Loevenhart and Schmitz isocaine. Tutocaine has been championed by Blum, a leading urologist of Vienna, and Chetwood and Cooney, in 1925, reported their experience with its use before the New York Academy of Medicine.

Henschen of Basel, in 1929, reported 500 cases in which percain, which is called nupercain in the United States, had been used. This agent is being used in the United States and on the continent and produces several hours of anesthesia without producing slough. It is a quinine derivative; it has been used by Keyes, McLellan, Lundy and others in this country and has great promise.

As a result of the developments of these less toxic drugs, the use of spinal anesthesia became more general and numerous series of cases were reported. Delaup, in 1910, reported 1,239 cases. In 585 cases, operation was for genito-urinary conditions. Richards, in 1911, reported 500 cases; 219 were urologic conditions in which operation was required. Dax, in 1913, reported its use in 1,500 cases; 168 were urologic conditions.

Gray and Parsons of Birmingham, England, in 1912, made an exhaustive study of variations in blood pressure associated with the induction of spinal anesthesia. They concluded that the bulk of the fall in arterial blood pressure during high spinal anesthesia is attributable to the diminished negative intrathoracic pressure during inspiration which is consequent on abdominal and lower thoracic paralysis. They noted that when the negative pressure in the thorax is increased the arterial blood pressure rises.

Pauchet, in an address before the French Association of Urology, in 1913, stated that for prostatectomy he was in the habit of using spinal anesthesia and had done so on 300 occasions, that it decreased hemorrhage, gave complete abdominal relaxation, and so rendered enucleation easy. The same year Morrison reviewed 1,295 operations, many of them done for urologic conditions, including forty-three renal operations. He wrote: "The danger incidental to spinal anesthesia lurks in the lowering of the blood pressure." Believing this to be the main hindrance to its more universal adoption among urologists, Smith, working with Porter, in 1915 reported the results of fifty experiments on cats. They found that the quantity of anesthetic solution was more important as regards diffusion than its concentration, dilute solutions usually spreading farther than concentrated ones. The introduction of procaine beneath the dura in the region in which the splanchnic nerves are given off caused as profound a fall in blood pressure as was caused by complete resection of the cord in the upper thoracic region. This, he felt, proved that the fall in blood pressure was not due to toxicity of the drug or to paralysis of the bulbar vasomotor center but to paralysis of the vasomotor fibers regulating the tonus of the blood vessels in the splanchnic area. Since these nerve roots come off between the second and seventh thoracic vertebrae, the chief practical point to bear in mind, they felt, was to prevent diffusion of the drug toward the head to a sufficient height to paralyze these nerve roots.

This they accomplished by giving a concentrated solution, using not more than 2 cc. of a 5 per cent solution.

Smith, in 1920, again reviewed the matter before the American Urological Association and emphasized that in urologic cases with poor renal function spinal anesthesia is the one of choice for, as Bier earlier pointed out, it does not have deleterious effects on renal function. Labat, before the Chicago Medical Society, in 1921, reported 110 cases in which he had tried the method since coming to the Mayo Clinic, including many operations of prostatectomy and resection of diverticula.

Stimulated by the discussion that followed Smith's earlier paper, Chute, in 1922, reported 328 cases of prostatectomy in which he employed spinal anesthesia without serious complications attributable to the anesthetic.

Stirling and Lawrence, in 1923, published a similar report. Rytina and Tolson, in 1924, published an article. Campbell, in 1926, reported the more general use of spinal anesthesia in the urologic service at Bellevue Hospital; 410 patients had received spinal anesthesia with procaine.

Labat, in an address before the Brooklyn Surgical Society in May, 1927, and in the next year, emphasized that the danger of spinal anesthesia is not from the fall in blood pressure, except as it produces cerebral anemia, but is attributable to the increased volume of blood in the viscera, due to splanchnic paralysis and vasomotor collapse. He expressed the belief that this cerebral anemia can be avoided by placing the patient in the Trendelenburg position immediately following the intraspinal injection and that by this procedure the brain will be kept amply supplied with blood, and irremediable respiratory failure will be avoided.

Lundy, in experiments on dogs, found that if mechanical, artificial respiration is maintained so that the internal positive and negative thoracic pressure is regulated, the blood pressure and pulse rate do not vary from normal. In one animal it was necessary to carry on respiration for ten hours. Stimulants were not used and the dogs were kept in a horizontal position. These experiments seem to bear out the contention of Gray and Parsons and emphasize Green's conclusion that the output of the heart is dependent on the output of blood from the lungs to the heart.

To insure that the blood pressure will not drop during spinal anesthesia, Ockerblad and Dillon, in 1927, conceived the idea of giving ephedrine, 1 Gm. subcutaneously, and reported twenty-four cases in which the blood pressure was sustained.

Pitkin, in 1927, reported 600 inductions of spinal anesthesia with a special formula.

Keyes, in 1928, stated that spinal anesthesia is admirably suited for all operations on the bladder: "For five years I have used capsules containing 120 mg. of novocaine crystals without any fatalities."

In April, 1930, Lundy stressed the importance of the four factors to be considered in the technic of spinal anesthesia: (1) the dose, (2) the dilution, (3) the point at which the injection is made, and (4) the speed at which the injection is given.

PARAVERTEBRAL ANESTHESIA

Corning's attempt at spinal anesthesia in 1885 is the first recorded instance of successful paravertebral anesthesia, but the toxicity of the drug prevented a sufficiently extensive area being anesthetized to make the procedure practical.

Sellheim again tried the method in 1905, with less toxic drugs, and by injecting close to the posterior roots of the eighth to the twelfth thoracic nerves, in addition to the ileo-inguinal and ilio-hypogastric, was able to do abdominal operations successfully. He is therefore justly credited with being the originator of this method of anesthesia.

It was six years later, Kappis having in the meantime greatly improved on Sellheim's technic, that the method was first used in urologic surgery. Läwen of the Leipzig clinic, in 1911, blocked the nerves from the ninth thoracic to the third lumbar and removed a renal calculus from an aged and debilitated patient with such advanced cardiovascular-renal disease that a general anesthetic was contraindicated. This method of anesthesia ever since has been considered particularly applicable to renal surgery in cases in which there is extreme debility and marked renal impairment.

Finsterer, in 1912, did much thorough and comprehensive work on the subject and appreciably improved the technic. Muroya, in 1913, did extensive animal experimentation and demonstrated that the toxicity of paravertebral injection was six times more than that of ordinary subcutaneous injection, as the result, he believed, of its more rapid lymphatic absorption. He therefore advocated the addition of gelatin and epinephrine to the solutions used in order to delay this absorption, and emphasized the importance of slow injection.

Sourdat, in 1914, published a paper in France advocating the use of the paravertebral method in nephrectomy for renal tuberculosis. At the University of Freiburg in the Frauenklinik the method was popularized by Siegel. He combined it with parasacral anesthesia after the technic of Braun in order successfully to carry out pelvic surgical procedure. When members of the American Gynecological Club visited Freiburg, in 1914, Kroenig read a paper on the subject, the material for which was prepared by Siegel. Included in the operations he reported were fourteen on the kidney. Owing to the World War, which began one month later, the paper was not published in America until 1916, when it was translated by Konrad. The same year Siegel reported the results in 600 cases at Freiburg, and Jones of Seattle described and advocated the method, emphasizing particularly its applicability in those cases in which a general anesthetic was contraindicated. He reported ten cases in which he had used the method successfully. In the meantime Konrad had been allowed to try out the method in the gynecologic service of the Boston City Hospital and in 1917 he reported fifty cases in which it was used successfully. Kimpton, in the same year, also reported the cases of ten patients whom Konrad had anesthetized for him by this method. It did not receive rapid or universal recognition. In fact, I remember distinctly seeing caudal anesthesia demonstrated in the same hospital in 1914, six years before its general adoption among urologists in America.

Allen, in his book published in 1918, gave considerable space to the method, describing the technic of Kappis, Braun, Finsterer and others, but did not state that he had ever used the method himself. Siegel, also in 1918, published another paper on the subject in Germany; during the World War he had used the method in more than 2,000 cases. Farr, in 1919, in a short article, advocated the method for renal surgery, but it was not adopted in America. However, articles by

Jentzer, Weimann, Hering and Labat were appearing in the European literature. When Labat came to America in 1920 he employed paravertebral anesthesia, and Meeker, in 1923, published a comprehensive review of his technic and the results of its application at the Mayo Clinic. In conclusion he wrote: "Paravertebral nerve block at all levels of the spine is difficult to produce and distressing and painful to most patients when preliminary narcotics are not employed. Compared with the present very efficient methods of local infiltration and general narcotics, paravertebral anesthesia for abdominal surgery in the experience of the clinic has been an unsurgical procedure even in the hands of experts." Lowry, however, in a paper read before the Illinois State Medical Society in 1922, after giving a thorough lantern slide demonstration of the technic of paravertebral anesthesia, closed by saying: "We expect to see all anesthetists of local method becoming more enthusiastic over paravertebral as they progress with it. Nephrectomy or nephrotomy is an ideal operation for the application of paravertebral anesthesia." Van der Hütten, in 1923, published an article in the German literature on the application of paravertebral anesthesia to genito-urinary work, and Kolischer and his associates, in 1924, advocated its use as a routine in renal surgery. One of the associates, Schnetzer, had acquired the technic in the urologic clinic at Budapest. They reported that they and others in America had used this method of anesthesia in more than 700 cases with only four failures. Later in the same year the first of a series of articles on the subject, by Lowsley and his associates, appeared. Lowsley adopted the method as a routine procedure in his clinic and his technic and results were summarized by Henline, in 1929. The procedure has not been generally adopted as a routine in renal surgery, but it is reserved, rather, for cases in which general anesthesia is contraindicated. The tediousness of the method, together with the pain frequently experienced when traction is made on the pedicle, unless splanchnic anesthesia has been added to paravertebral anesthesia, probably accounts for the lack of its more general adoption.

SACRAL ANESTHESIA

Before a consideration of the history of sacral anesthesia, the various terms associated with its application must be defined. Parasacral anesthesia is the infiltration of the sacral nerves on the anterior surface of the sacrum and is now generally termed presacral anesthesia. Caudal block means injection into the sacral canal by passing the needle through the sacral hiatus. This is an epidural anesthesia and by some is so termed. Transsacral anesthesia is the injection of the sacral nerves individually through the posterior sacral foramina. Sacral block is a combination of caudal block with transsacral anesthesia.

Parasacral Anesthesia.—The first attempts at prostatectomy under local anesthesia were made in 1907. That year Payr, in Germany, reported injecting the abdominal wall with eucaine, and, after performing cystotomy, infiltrating the periprostatic tissues through the mucosa of the bladder before enucleating the gland. Lanz, in 1908, reported the use of the same method but he replaced eucaine with cocaine for infiltrating the abdominal wall. He did not inject the periprostatic tissue, as he was able to enucleate the gland without other anesthetic than hypodermic narcotics. Kayser, in 1911, followed the same procedure but used procaine instead of cocaine. Similar methods were reported by Kreps, in 1912, and by Chevassu, in 1913.

Braun's book on local anesthesia was translated into English by Shields in 1914. In this edition infiltration of the abdominal wall with procaine was advocated, together with anesthetization of the mucous membrane of the bladder by a 1 per cent solution of alypin epinephrine, but a general anesthetic was advised during the enucleation of the prostate gland. Legueu, in the same year, brought forward several long curved needles by which the prostate gland might be injected through the suprapubic wound. Allen, in a paper before the Louisiana State Medical Association, also urged infiltration of the prostatic capsule, believing that even if a general anesthetic is required the anoci-association described by Crile is produced and the patient is greatly benefited. Barringer, in 1916, reported four cases in which prostatectomy was performed and in which he had carried out the technic of Legueu; he recommended it, for although it requires a longer time he believed the relief from renal irritation incident to a general anesthetic outweighed this disadvantage. The method, however, never proved completely satisfactory as the patient invariably experienced considerable pain at the time of the enucleation of the gland. Attempts were therefore initiated by Hohmeier, Perrier, Colmers and others to infiltrate the prostate gland through the perineum, with the finger in the rectum for a guide. Franke and Posner, in 1912, by injecting the pudic nerve, and at the same time anesthetizing the pelvic branches of the posterior cutaneous femoral nerve by injecting in the ischiorectal fossa, had made painless the operation of litholapaxy and several operations of perineal prostatectomy. In America, Kolischer and Eisenstaedt, in 1917, after considerable anatomic study, reported that they had been able to perform prostatectomy successfully by injecting the prostatic plexus of nerves through the perineum. In cases in which this procedure had been faulty they injected still more solution through the mucosa of the bladder before enucleating the gland.

In the meantime, Braun, in 1914, showed that it was technically much simpler to block the sacral nerves at their points of emergence from the anterior sacral foramina. This blocked the pelvic nerve, the pudendal plexus, and the posterior cutaneous femoral nerve, and gave much more complete anesthesia than the various infiltration methods. Braun called it parasacral conduction anesthesia after the original paravertebral anesthesia of Sellheim, by which injections are made of the nerves as they leave the spinal canal. Unfortunately, the technical difficulties proved greater than the originator anticipated.

In this country Farr experienced 10 per cent of failures when the method was used for perineal and rectal surgery. It was necessary to supplement with local infiltration which, in the case of prostatectomy, had to be extended to the capsule. The passage of long needles through the perineum, whether to do the original parasacral nerve block or later to sustain it with periprostatic infiltration, always had a considerable element of danger, as the possibility of puncturing the seminal vesicles or rectum was ever present. The necessity of keeping one finger in the rectum also prevented proper aseptic technic.

Because of these objections, the method never became popular and was rapidly replaced by the development of caudal block anesthesia. Hertzler rec-

ommended, in 1916, that caudal block anesthesia should be used to supplement the usual infiltration anesthesia.

Caudal Block Anesthesia.—It had been observed almost immediately after the discovery of cocaine that if a solution was injected in close proximity to a sensory nerve trunk the area of anesthesia was not limited to the region injected but extended to the entire region supplied by the nerve with which the solution had come in contact; Corning first demonstrated this in 1884, in respect to the nervus cutaneus antibrachii, but because of the extreme toxicity of cocaine when used hypodermically the method was not generally adopted.

Utilizing the same principle of the diffusion of the injected fluid into the nerve sheaths, Cathelin, in France, about 1900, attempted to benefit patients suffering with enuresis, urinary incontinence, and other neurologic manifestations by injecting solution of sodium chloride through the sacral hiatus. Later he injected cocaine instead of solution of sodium chloride by the same route in dogs and produced extensive anesthesia of the lower extremities. When attempting the same procedure in man, he failed. Stoeckel, a German obstetrician, in 1909, employing the new and less toxic drugs eucaine and procaine, gave a series of injections into the sacral canal during labor and published his results, calling the method "sacral anesthesia."

Läwen of Leipzig, in 1910, gave the method careful investigative study. He injected colored fluids into the sacral canal of cadavers and demonstrated that the fluid never appeared in the spinal canal, showing that the spinal canal was completely separated from the sacral canal by the dura mater. Gros, in the pharmacologic laboratory, had established that procaine penetrated the nerve sheaths more rapidly if sodium bicarbonate was added. Läwen at once utilized this discovery and by using a greater amount of an alkaline solution of stronger concentration (20 to 25 cc. of a 1.5 to 2 per cent solution) produced anesthesia in the gluteal region, rectum, anus, skin of the scrotum, penis, upper and inner parts of the thigh, and the vulva and vagina. He performed all the common operations on these parts and hence was the first to employ sacral anesthesia for operative work. As a result it became a routine for the genito-urinary work at the Leipzig clinic. Läwen reported forty-seven cases with 15 per cent of failures. In the first reference to twilight sleep to appear in the American literature, under the authorship of Schlimpert of Freiburg, in 1913, its use was described.

Bryan, in 1913, reported Läwen's method of anesthesia but failed to arouse much interest. Harris, in 1915, wrote a comprehensive article on regional anesthesia in which he stated: "One of the most satisfactory regions to block is the perineum, including everything from the sacrum behind to the symphysis in front in either sex. This region is blocked by injection through the sacral canal." Reading this, Bransford Lewis at once put Läwen's procedure to practical application and in 1916 reported with Bartels eighty-five cases in which he had used it. There were 15 per cent of failures. He called attention, as earlier authors had, to the precautions to be taken to insure that the needle did not enter the dural sac or a vein. Goldenberg, in 1914, had reported complete anesthesia of the entire lower half of the body for twenty-four hours following an injection into the dural sac, and Zweifel reported a death caused by the injection of 0.8 Gm. of procaine into the dural sac by this method. Spinal fluid appeared and the needle was withdrawn before more solution was injected. It was not withdrawn sufficiently, however, and death occurred ten minutes later from cardiac and respiratory failure. Kroenig reported a case of partial respiratory paralysis following injection into a sacral vein.

Hertzler, in his book "Surgical Operations with Local Anesthesia," published in 1916, gave the technic of the procedure, and in an article which appeared in 1916 he recommended the method for prostatectomy, stating: "The operation of election is performed by a combination of sacral blocking and direct prostatic infiltration." He expressed the belief that the fear of puncturing the dura was greatly exaggerated. Since then Labat has devised a method by which, in observing the relationship between the individual sacral hiatus and a line joining the posterior and superior iliac spines, it is possible to estimate the exact depth which the point of the needle can safely reach in the sacral canal without touching the dural sac.

Pickins, in 1916, reported eighty-one perfect results and seventeen failures in a series of 100 cases.

Thompson, in 1917, carried out an anatomic and experimental study of sacral anesthesia. He examined thirty-three cadavers and found the average distance from the sacral hiatus to the dural sac to be 5.8 cm., the longest 7 cm., and the shortest 4 cm., and so established the length of needle it was safe to employ in the work.

Lynch, in 1918, reported using the method in eighty cases, with sixteen failures, and recalled that he had reported twenty other cases five years earlier. During this year the second edition of Allen's book on "Local and Regional Anesthesia" was published and in referring to sacral anesthesia Allen stated: "This method is still in its infancy. It has already gained a wide range of popularity and as it possesses none of the disadvantages or dangers of spinal anesthesia it will probably be developed to a high state of efficiency. . . . The element of uncertainty, 10 to 15 per cent of failures and the delay before anesthetization of ten to thirty minutes operates considerably against its universal adoption."

C. H. Mayo, in 1919, while visiting European clinics, was so much impressed with the work being done in local anesthesia that he induced Labat, of Pauchet's Clinic in Paris, to come to the clinic.

Transsacral Anesthesia.—Pauchet and his associates had been overcoming the 10 to 15 per cent of failures associated with caudal block by injecting the sacral nerves individually through the posterior sacral foramina, a method which was originated by Danis of Brussels, in 1913, and has become known as transsacral anesthesia. It was early adopted by Pauchet and his associates in Paris and was reported by them in 1914. At the same time, Olivieri was using it in Buenos Aires and wrote, in 1915, that he considered it the method of choice for perineal surgery when combined with caudal block.

Labat, on his arrival at the Mayo Clinic in 1920, introduced the combined method of caudal block and transsacral anesthesia he had been using in Paris. He deserves the credit for the introduction of the method in North America. Scholl, in 1921, described the technic and reported the results of its use at the Mayo Clinic up to that time and so contributed to its rapid popularization. Meeker and Frazer, in 1922, reported

225 cases with only three failures, demonstrating that the large percentage of failures that formerly had prevented general adoption of caudal block had been reduced to a minimum. This improvement had been brought about by adoption of the additional measure of transsacral anesthesia.

The method at once became popular and reports of its general adoption from various urologic clinics rapidly appeared. The different advocates of the method, however, were not in agreement as to the amount and concentration of the solution it was best to employ. To determine this point, Shaw of the Brady Urological Institute at Baltimore carried on experiments on cadavers and showed, in 1926, that from 15 to 20 cc. of a solution injected into the sacral canal is sufficient to fill it and that a greater quantity extends upward toward the lumbar and thoracic region of the vertebral canal. This results in paralysis of the vasomotor fibers regulating the tonus of the blood vessels of the splanchnic area, so that symptoms of falling blood pressure similar to those seen in spinal anesthesia may result. Shaw showed that the incidence of such reactions was in direct proportion to the quantity of solution injected. Since all the nerves supplying the lower part of the urinary tract make their exit through the sacral canal, there seemed to him no anatomic basis for injecting more fluid than was required to fill the canal.

During the development of local anesthesia, including sacral anesthesia, various salts, particularly those of sodium, potassium and calcium, were from time to time added to the procaine solutions because of their supposed beneficial effect. The belief was that they resulted in more rapid penetration, slower absorption, or longer action of the drug. Menten demonstrated that nerve impulses were blocked by potassium salts.

Zweifel expressed the belief that more lasting anesthesia was produced if small amounts of sodium sulphate were added, and Harris maintained that the efficiency of the solution was increased by the addition of calcium chloride. Strauss stated the belief that sodium sulphate prevented the decomposition of epinephrine. Gros early advocated the addition of sodium bicarbonate, and Braun, potassium sulphate; the former was supposed to increase the rapidity and the latter, the intensity of the anesthesia. Scholl reported that when he added sodium, potassium or calcium salts to the procaine the anesthesia was not appreciably different, and Farr found the same to hold relative to sodium bicarbonate.

In the selection of the ingredients of the solution used there will probably always be room for individual opinion; suffice it to say that Eisendrath in the recent edition of his book still retains potassium and sodium salts in the solution he recommends. On the other hand, Lundy in his equally recent paper on regional anesthesia reported using only procaine in solution of sodium chloride with the addition of epinephrine and he suggested that even the benefit of adding this drug might bear investigation with profit.

URETHRAL ANESTHESIA

After the demonstration by Koller of the anesthetic properties of cocaine on the conjunctiva, cocaine was rapidly applied to every mucous surface of the body, including the urethra. Its toxicity following too large dosage was soon demonstrated, and as its less toxic derivatives were developed they were substituted for the cocaine, as were other anesthetic drugs such as alypin. The early methods of application were by injection in solution, and this remains to date the most common mode of administration. However, Bransford Lewis, in 1904, because he believed accurate dosage could not be obtained by this method, devised a urethral tablet depositor for placing any amount of an anesthetic drug desired in the posterior part of the urethra. For the first ten years he employed tablets of cocaine and did not observe any serious toxic effect. With the introduction of alypin this drug was employed, only to be superseded later by procaine.

Randall, in May, 1923, reported five deaths and twenty-five cases of alarming toxicity due to the use of cocaine in the urethra. In the discussion of this paper there was wide divergence of opinion. Gardner reported the use of cocaine for eighteen years in approximately 50,000 cases without ill effect and Walther also certified to its freedom from reaction in his hands, while Livermore and Crowell reported three additional deaths. Keyes, in his latest textbook, stated: "Cocaine should never be used in the urethra." Yet at the Mayo Clinic it has been employed as a routine for cystoscopic examinations during the last ten years with most satisfactory results. Recently, in an editorial entitled "Accidents with Local Anesthetics" in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Klotz is quoted as reporting 102 deaths from cocaine; in one instance it was administered by instillation. Undoubtedly the all-important question is the dosage and fresh preparations. Stock solutions are said to become toxic as a result of fungus growth.

THE USE OF SPINAL ANESTHESIA IN UROLOGY *

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At a meeting of this section held in St. Louis in 1922, I presented a paper entitled "Spinal Anesthesia in Prostatectomy." In reading over that paper I am surprised and, I will confess, rather chagrined, to find that my use of spinal anesthesia has not materially changed, so far as the great essentials go, in the interval that has elapsed.

In the first place I must state that perhaps my title is a little misleading in that I have never used spinal anesthesia for kidney operations but have confined my use of it to operations on the lower part of the urinary tract. My reason for this is that to me the special indication for spinal anesthesia is the great susceptibility to injury from the use of inhalation anesthesia, especially ether, that comes when both kidneys have been, for a considerable time, subjected to urinary back pressure; this condition usually comes from obstruction at or near the outlet of the bladder. To this peculiar susceptibility to the irritative action of inhalation anesthesia that may come simply from kidneys having accustomed themselves to working against the back pressure of a residual urine, there will sometimes be added in these cases of urinary back pressure a certain amount of renal dilatation, and in instances in which the residual urine is infected there may be an actual infection of the kidneys. To my mind there is no similar state of affairs in disease conditions that arise primarily in the kidneys themselves and therefore a less clear indication

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for the use of spinal anesthesia. Furthermore, the danger from spinal anesthesia increases as we go higher with it. Because of my known reluctance to use spinal anesthesia in kidney operations, I am occasionally asked the hypothetical question whether I do not think that one should use spinal anesthesia in removing a tuberculous kidney in a person with active tuberculous disease of the lungs. This I have found a theoretical problem rather than an actual condition with which I am faced. I do not remember any instances in which I have wished to remove a tuberculous kidney in a patient with active pulmonary tuberculosis.*

I have on a number of occasions—in fact, twice within the last few months—opened and drained a kidney in a patient to whom I have not thought it wise to give an inhalation anesthesia. Sometimes this has been because of a pyonephrosis with marked sepsis; sometimes because of an anuria with an impending uremia. With patients of this sort I have used local anesthesia and, while it has not been ideal, it has been very satisfactory. Within a short time I opened a kidney in a man, aged 60, who had passed no urine for forty-eight hours in spite of the use of agents calculated to start renal secretion, such as salt solution under the skin, and caffeine. This man was distended, dull, and bordering on uremia. The roentgenograms showed that one kidney was simply a calcified mass and the other, which had been slightly painful, was enlarged but without shadows indicating disease. Following nephrostomy under local procaine hydrochloride, this man's kidney took up secreting well and for a week he did finely, apparently recovering from his uremic condition; he then, however, developed a bronchopneumonia that proved to be fatal.

While I quite agree that there are a few renal conditions in which ether should not be used, I have found, as I have said, the indications for the use of spinal anesthesia in operations on the kidney far less frequent than in operations on the lower urinary tract, for it is practically only in disease that is primary in the lower part of the urinary tract that the two kidneys are equally affected through back pressure. In the cases of kidney disease that require operation, when I believe inhalation anesthesia is contraindicated, I use local procaine hydrochloride anesthesia. The fact that this has served me well is my reason for not having made use of spinal anesthesia in kidney operations. The same applies to the use of spinal anesthesia in operations carried out on a ureter.

The most definite indication for the use of spinal anesthesia in urology is the necessity for operation in a condition in which both kidneys have been rendered especially susceptible to the irritative action of inhalation anesthesia as a result of urinary back pressure, or infection, or of a combination of the two. The condition that most often presents this picture is prostatic obstruction, and this is the condition in which I most frequently use spinal anesthesia. Perineal section for tight stricture is another very definite indication for the use of spinal anesthesia because of the back pressure that it has often caused. In my opinion there is no more urgent indication for the use of spinal anesthesia than in operations for extravasation of urine. The back pressure and the sepsis these patients present make spinal anesthesia most desirable. In no type of patient has the substitution of spinal for inhalation anesthesia produced a more happy result. In cystoscopic maneuvers, in sensitive bladders, more especially tuberculous ones, spinal anesthesia is a great advantage. It does away with the pain and increases the tolerance of the bladder to fluid without affecting the renal activity or the patient's ability to cooperate in various radiographic maneuvers. In crushing stones in the bladder, spinal anesthesia is often a desirable type. Tumors of the bladder are often very satisfactorily removed under spinal anesthesia and painful fulgurations easily carried out under this form of anesthesia. The patient with sugar in his urine should, I believe, be given the advantage of spinal anesthesia, whenever this is possible. In my opinion, the great dread of the loss of consciousness, which some patients have, is in itself a sufficient indication for the use of spinal anesthesia in any operation on the lower urinary tract.

There are a few contraindications to the use of spinal anesthesia. A very nervous or mentally unstable patient or one who is strongly prejudiced against its use rarely does well under it. Not that there is a greater risk to life with patients of this type, but besides having all sorts of hysterical manifestations they complain of pain even when there is every outward evidence that the anesthesia is good. This contraindication is, however, only relative and the indication for the use of the anesthesia, even in a patient of this type, may overbalance the contraindications. I rarely use spinal anesthesia in young persons. This may be prejudice or because I see relatively few children. The youngest patient on whom I remember using it was a boy aged 17, with a very painful tuberculous bladder; in this instance its use was perfectly satisfactory. I have used it with a systolic blood pressure as low as 80 but dislike to have the patients' systolic pressure below 100, preferring it 120 or even higher.

Though as I have said, there have been no great changes in the essentials in the past few years, certain minor changes have crept into my technic of carrying out spinal anesthesia. For a good many years I have been accustomed to make my own spinal injections for the reason that there was a time, after I had taken up the use of spinal anesthesia and was thoroughly convinced of its advantage, that there was a reaction against its use among the anesthetists and I found it easier to give it myself than to convince the anesthetist of its desirability for a given patient. Though I make the injection myself I have some one present who devotes his whole attention to watching the patient's general condition during the operation. As preoperative medication I use from $\frac{1}{6}$ to $\frac{1}{4}$ grain (11 to 16 mg.) of morphine subcutaneously, the amount depending on the weight of the patient, about forty-five minutes before the time of operation. In a few cases I have used $\frac{1}{200}$ grain (0.3 mg.) of scopolamine two hours before operation and repeated the dose an hour later. This has acted well in the instances in which I have used it, though it is not my routine procedure. For a time I used ephedrine, just before making my spinal injection, to combat the fall of blood pressure that is so often seen following spinal injections. In a few instances it seemed to me that I had more oozing following the prostatic enucleation than I was accustomed to see and so gave up its use. As I still use a relatively heavy solution—that is, the procaine hydrochloride dissolved in water—I almost invariably make the injection with the patient sitting on the side of the table, his feet in a chair, his back bowed well forward, and his chin flexed on his chest. The injection can, however, be made with the patient lying on his side, his knees flexed, and his shoulders somewhat raised. In operations on the lower part of the urinary tract, those to

which, as I have said, I limit its use, I prefer to give the spinal injection in the third lumbar interspace, though I sometimes give it as high as the second interspace. Occasionally for a perineal prostatectomy I inject in the fourth lumbar interspace. In making my spinal injection I have been accustomed to use a needle of 18 or 19 gage, although I have sometimes, of late, used a smaller needle, as is generally done now. I think that the use of this smaller needle, 21 or 22 gage, is less likely to be attended with the leakage of spinal fluid following the injection, though I have found that with the larger needle this leakage is apparently prevented if one will apply pressure with his thumb over the puncture for a few moments after he has withdrawn the spinal needle. This apparently seals the opening.

It is a refinement of technic to inject a little procaine hydrochloride into the skin and subcutaneous tissue at the point where one wishes to make the spinal puncture. I rarely do this, as I have not been convinced that the sum total of discomfort to the patient is any less when this is done than when the spinal puncture is made direct; then, too, I do not always succeed, in the old men with stiff spines, in getting into the space that I try at first, but have to try one higher or lower before succeeding. Before making the spinal injection it is, of course, absolutely essential that one shall be sure that he has reached the subarachnoid space and that he has obtained clear fluid. I used to be troubled occasionally with getting bloody fluid on making a spinal puncture, which I assume was the result of introducing my needle too far into the canal and wounding a vein on the opposite side. The needle should be introduced only a short distance after the lack of resistance that indicates its entrance into the canal is felt. The sudden letting up of the resistance that one feels as the point of the needle enters the subarachnoid space is very characteristic and the character of the fluid that drops from the needle shows whether or not it is clear.

The solution that I use for spinal anesthesia I make from a prepared tablet that I have used for a number of years. This tablet contains about 50 mg. of procaine hydrochloride with 0.000083 Gm. of epinephrine. I boil two of these tablets in 2 cc. of water, making about a 5 per cent solution, and use from 1.5 to 1.75 cc. of this solution in a patient weighing from 125 to 150 pounds (56 to 68 Kg.) or from 75 to 85 mg. of procaine hydrochloride. On a heavier patient I use the whole 100 mg. Only very rarely have I used a larger dose than 100 mg. This solution, which I have in a 5 cc. syringe, I attach to my spinal needle after the puncture has been made and dilute with aspirated spinal fluid up to 5 cc. This assures me that my needle is still in the proper place. I then inject slowly, taking from ten to thirty seconds to make the injection. The patient is then kept in a sitting position for from two to four minutes, after which he is allowed to lie down with his head fairly high.

Ordinarily after such an injection into the third interspace I will have in from two to seven or eight minutes an anesthesia that extends from 2 or 3 inches below the umbilicus down. This will usually last for an hour to an hour and a half. It may be, if I am doing a second stage suprapubic enucleation, that I will find the upper part of the skin incision somewhat sensitive. If so, I use a little local procaine hydrochloride. I have confined myself to the use of this solution and to this simple technic as it has seemed to meet my requirements. It seems to me, however, quite immaterial which type of solution one uses in spinal anesthesia, provided only one understands that type well. I believe it is probably unwise for one to use sometimes an anesthetizing fluid which is lighter than spinal fluid and which therefore rises, and at other times to use a heavier fluid that sinks down. This, I believe, is likely to lead to a confusion that may be dangerous. One should select the one he believes the better for his purposes and familiarize himself with its use. Naturally, as applies in so many things, the man who has had considerable experience with the use of a particular tool will usually get better results with it than he will with the use of what is perhaps a better tool but with the use of which he is not so familiar.

In 1922 I made a report on 328 spinal anesthesias that I had used in prostatectomies. Since that time I find that I have used spinal anesthesia 512 times in prostatectomies, mostly for the enucleation of a prostate by the suprapubic route. A certain number, however, have been removed perineally. In going over my statistics I find that, of the 512 spinal anesthesias that I have done lately, 88 per cent were put down as satisfactory and 10 per cent were fairly satisfactory, while 2 per cent were unsatisfactory. In this series of 512 cases of spinal anesthesias I found there were 43 cases, or 8 per cent plus, in which I used a little supplementary anesthesia. Usually this was a slight inhalation of ether, or gas and oxygen, though in 17 cases it was simply a local injection of procaine hydrochloride about the upper end of the suprapubic incision. Dr. W. C. Foster[1] calls attention to certain anatomic changes in the subarachnoid space that may account for some of the vagaries of the distribution of spinal anesthesia, even when there is every reason to suppose that the injection has been made into the subarachnoid space. He describes little pockets due to adhesions and little trabeculae that may definitely limit the distribution of the solution. He also gives a possible explanation for the fact that a perfectly good anesthesia without loss of motion is sometimes seen. He accounts for this on the possibility that besides these pockets which may cause the irregular distribution of anesthesia there may sometimes be on the part of the posterior roots a particular affinity for procaine hydrochloride.

In a certain number of these cases the pain of which patients have complained has been to my mind purely psychic. I have found it practically hopeless to attempt the use of spinal anesthesia in a patient who is strongly prejudiced against it. Under these conditions he almost invariably complains, often when there is every outward indication that the anesthesia is good as shown by relaxation of the anal sphincter and the failure to notice an unexpected needle prick. Patients with inferior intelligence sometimes do not distinguish between the uncomfortable sensation of pressure that is often felt when one is working through a suprapubic incision, and real pain.

Besides the 840 times that I have made use of spinal anesthesia in prostatectomies I have made use of it many times for other operations on the lower urinary tract, such, for instance, as operations on bladder tumors, crushing stones, painful cystoscopies, fulgurations, closing suprapubic fistulas, as well as in a considerable number of urethrotomies, both internal and external, and in a few cases of urinary extravasation. I have not had these cases counted carefully but I estimate that they bring my total use of spinal anesthesia to

1. Foster, W. C.: Certain Anatomic Aspects of Spinal and Sacral Anesthesia, Proc. Staff Meet., Mayo Clin. 4: 369 (Dec. 18) 1929.

well over 1,000 cases, but this last figure is simply an estimate. I am glad that I can still report that I have had no immediate fatalities and no remote ones that could be attributed to spinal anesthesia.

The complications that I have encountered in spinal anesthesia may be divided into the immediate ones and the more remote. Several times a year a patient after a spinal injection becomes blanched almost at once, complains of being faint, has a poor pulse, and may or may not vomit. He may have a little twitching. Whether it is purely psychic as some types of fainting seem to be, or whether it is due to the shock of the spinal puncture, I do not feel sure. At any rate, it seems rarely necessary to do more than to have the patient lie down and perhaps inhale a little aromatic spirit of ammonia. In one patient who did this recently and who had a poor myocardial heart, the blood pressure dropped from 140 to 36 in a few minutes. However, after a short time, he recovered and I proceeded with his operation as usual: he made a good convalescence. A condition that I believe is due probably to toxic action on the circulatory centers is one in which some little time after the spinal injection, perhaps fifteen minutes or longer, the patient becomes pale, sweats, has a thready pulse and sometimes vomits. Sometimes he has a little air hunger. Dr. George Gilbert Smith [2] in an article read before the American Urological Association in 1920 suggested that conditions of this sort were due to "paralysis of the vasomotor fibers regulating the tone of the blood vessels in the splanchnic area. The most important of these fibers are given off from the spinal cord from the second to the seventh dorsal segment, though some of lesser importance are given off as far down as the first lumbar." This condition has seemed to be controlled by a subcutaneous injection of caffeine, caffeine sodiobenzoate, strychnine, or camphor liniment, together with the inhaling of aromatic spirit. On a few occasions I have seen what seemed to be a definite convulsion. On two occasions this has happened in physicians. I presume these two were toxic manifestations. I used simply the usual stimulants, and the trouble so far as the patient was concerned passed in a short time, although its depressing effect on me was somewhat more prolonged. In my use of spinal anesthesia I have seen a few toxic cases in which the respiration seemed to be more affected than the circulation. In most of these I have used rebreathing in a closed cone although in a very few I have resorted to a little artificial respiration. As these conditions cleared up promptly I am not sure that they should be considered as examples of threatened respiratory failure.

Of the remote complications of spinal anesthesia the one that I see most frequently is the spinal headache, though I see this less frequently than formerly. It so happens that I have seen within a month a spinal headache in a patient on whom I had done an internal urethrotomy. This lasted only a few days. Some that I have seen previously have lasted a week and I have known of a few that lasted longer. So far as I can remember all these patients have made good convalescences, and it has been the rule that the headache appeared only when the patients were in a sitting position. Once the patient lies down, it disappears quite promptly. I am unable to account for the fact that I have seen fewer of these spinal headaches of late. I have been using a somewhat smaller needle in making the injections than I did at first, but not invariably. This may have produced less leakage of spinal fluid. Perhaps the fact that after making my injections lately I have usually held my thumb over the point of injection for a little while, to make sure that I have sealed the puncture by pressure, has had some effect, but this could not have prevented the leakage through the dura into the epidural space. Whatever the cause, it seems to me that the occurrence of spinal headaches has been much less frequent of late.

In my previous paper I spoke of instances in which patients had complained of a Dupuytren contraction following an operation under spinal anesthesia. I felt then, and feel now, that this was simply a condition that had been coming on for some time. It often happens in men of advanced years who have done hard manual labor that a condition of this sort first becomes evident after they have been laid up for a number of weeks. I think it must be remembered that most prostatic operations are done on men of advanced years, at a time when various little defects are apt to make their appearance. While it is possible that some of these may really be due to the spinal injection, we must appreciate that anything unusual that comes at this time is likely to be attributed to the spinal anesthesia, which is a relatively new procedure.

352 Marlboro Street.

2. Smith, G. G.: Spinal Anesthesia in Urology, J. Urol. 4: 237 (June) 1920.

INTRADURAL CAUDAL ANESTHESIA IN UROLOGY *

GEORGE H. EWELL, M.D.
MADISON, WIS.

With the development of modern methods of examination in urology, it will be found, in the examination and treatment of any group of urologic patients, that a certain percentage will require complete anesthesia of the urethra and bladder. Regional anesthesia in some form is particularly applicable in these patients. Urologic surgeons generally have adapted some form of regional anesthesia for urologic surgery; the benefits that their debilitated, septic and elderly patients have received from regional anesthesia have been manifold.

Before the introduction of epidural caudal and sacral anesthesia, the urologist had his choice of local anesthesia, by means of the topical application of cocaine and other anesthetic agents to the urethra, or some method of general anesthesia.

The use of local anesthesia in the urethra is successful to a certain degree, permitting satisfactory cystoscopic and other manipulations in some cases. Cocaine is the only drug that will produce satisfactory anesthesia by topical application to the urethra. It is not without its dangers; in my experience the reactions from its use have been numerous and at times most disconcerting.

General anesthesia with ether has a limited field of application. It is still given by the drop method for infants and children for cystoscopy and urologic operations. Attention has been called several times recently to the fact that a more careful technic of cystoscopy and the judicious use of local and regional anesthesia will obviate the use of ether for cystoscopic manipulations in the cases of many children. I have recently used intradural caudal anesthesia for cysto-

* From the Section on Urology, Jackson Clinic.
* Read before the Section on Urology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

scopic manipulation with entire satisfaction in two boys, aged 6 and 12 years, respectively. Ether has been abandoned for many years by most urologists for elderly patients. Nitrous oxide and ethylene have their advantages and disadvantages for cystoscopic manipulations. I find that these methods are too time consuming and cumbersome and that the patient's cooperation is lost.

Caudal and sacral anesthesia have no equal when it becomes necessary to examine a patient with a contracted bladder from tuberculosis of the urinary tract, in intramural cystitis, to fulgurate a tumor of the bladder or to implant radium in a tumor through the operating cystoscope. In these cases analgesia and relaxation are necessary for the proper performance of these examinations and treatments and add materially to the ease with which the manipulations are performed.

For prostatic punch operations I have found intradural caudal anesthesia of great value. I believe that the relaxation is of advantage. In my opinion it has enabled me to remove larger pieces of the obstructing tissue whether the instrument used was the knife type or the Collings apparatus.

Production of Caudal Anesthesia *

Cystoscopy (diagnostic, tuberculous cystitis (7), Hunner ulcer (2) ureteral dilation for calculi)	120	
Radium (bladder tumors and prostate and rectal carcinomas)	12	
Fulgurations	35	
Punch operations (two postoperative)	10	
Litholapaxy	3	
Foreign bodies in bladder	2	
Urethral strictures	8	
Prostatic abscess (Steven's intra-urethral sound method)	1	
		191

* In the upper half of the table the figures refer to the number of times the anesthesia was induced and not to the number of cases.

Operative Procedures †

Hemorrhoidectomies, fistulas and other conditions		27	
Prostatectomies	3		
Diverticula	2		
Vesicovaginal fistulas	2		
Combined with abdominal field block	—	7	
Perineal plastic operations in women, dilation, curettage, and radium		49	
			83
Total			274

† In the lower half of the table the figures refer to the number of cases.

That there has been a hesitancy among some urologists to employ regional anesthesia for operative cystoscopic procedures is shown by a statement in a recent article by one of America's leading surgeons, in which he states that several patients with stones in the ureter chose open operation to cystoscopic manipulation because the were so intolerant of cystoscopy. The patient who suffers unduly from these manipulations will instil fear of cystoscopic examination into the minds of others, so that many times patients refuse the initial cystoscopy for diagnosis. In the same class is the patient who has had cystoscopic manipulations by an operator not properly trained, and who usually has experienced great pain and discomfort. Later, these patients refuse another cystoscopy when it becomes necessary to have competent urologic study of their cases.

As the anesthesia produced by the intradural caudal method and that of the epidural caudal method is the same, the only difference being the technic of induction in the two methods, I shall briefly review the history of the application of epidural caudal anesthesia in urology.

With the introduction of epidural caudal anesthesia by Cathelin [1] in 1901, and the subsequent improvement and developments in drugs and technic, a safe and reliable method of block anesthesia was available to urologists. Cathelin's work was experimental on dogs. Stoeckel,[2] in 1909, produced sacral anesthesia in human beings. He used it chiefly in obstetrics; the method was popularized by Labat, and in 1916 Lewis and Bartels [3] reported their experience with this type of anesthesia in genito-urinary surgery and especially recommended its use in cystoscopic manipulations. In 1921, Scholl [4] reported its use in urology and likewise recommended it for cystoscopy and other endovesical manipulations. Young,[5] Berry,[6] Shaw,[7] Davis,[8] and Johnson [9] have reported on the use of epidural caudal and sacral block anesthesia for perineal prostatectomy and other operations through the perineum. It is the consensus of these authors that this type of anesthesia is the anesthesia of choice.

ANATOMY AND PHYSIOLOGY

The genital organs and bladder receive their nerve supply through the sacral nerves, chiefly the pudic. The sacral nerves arise from the fibers of the cauda and pass through the sacral canal and sacral foramina. The sacral canal is the downward extension of the spinal canal, but the closure of the dural sac opposite the second sacral segment separates the two canals.

Epidural caudal anesthesia is produced by depositing the anesthetic solution in the sacral canal, the needle having been introduced through the sacral hiatus. Should the anesthesia produced not be extensive enough or be unilateral, it is supplemented by the blocking of the sacral nerves on either or both sides by injecting the anesthetic agent around the nerves in the sacral foramina (fig. 1).

The technic of epidural caudal injection through the sacral hiatus and the injection of the sacral nerves in their foramina requires a certain degree of skill. As the result of anatomic variations of the sacrum in some individuals, the insertion of a needle into the sacral canal is impossible. Reactions with this method occur, and in my opinion the most serious reactions are usually due to the injection of the drug into the general circulation, as the sacral canal is lined with a plexus of veins; unless strict attention is paid to aspiration in the technic of this injection, these reactions occur quite frequently and are at times alarming.

Because of the inapplicability of the epidural caudal method in some cases, I have attempted to limit spinal anesthesia to the cauda by adding dextrose to the spinal fluid, in which were dissolved crystals of procaine hydrochloride, thereby producing a very heavy solution which would drop to the tip of the dural sac. The method was satisfactory.

As previously mentioned, the introduction of a needle into the sacral hiatus and into each of the eight sacral foramina is not without technical difficulties, and, I

1. Cathelin, Fernand: Les injections épidural, Paris, Ballière, 1903, p. 231.
2. Stoeckel, W.: Ueber sakrale Anesthesia, Zentralbl. f. Gynäk. **33**: 1, 1909.
3. Lewis, B., and Bartels, L.: Caudal Anesthesia in Genito-Urinary Surgery, Surg. Gynec. Obst. **22**: 262 (March) 1916.
4. Scholl, A. J.: Sacral Anesthesia in Urology, J. Urol. **6**: 149 (Aug.) 1921.
5. Young, H. H.: Epidural Caudal Anesthesia in Prostatic Surgery, J. A. M. A. **90**: 1021 (March 31) 1928.
6. Berry, G. P.: Caudal Epidural Anesthesia in Perineal Surgery of the Genito-Urinary Tract, J. A. M. A. **90**: 1018 (March 31) 1928.
7. Shaw, E. C.: Epidural Anesthesia for Perineal Prostatectomy, J. Urol. **15**: 219 (March) 1926.
8. Davis, Edwin: Perineal Prostatectomy Under Sacral Anesthesia, J. A. M. A. **91**: 1618 (Nov. 24) 1928.
9. Johnson, C. M.: Regional Anesthesia in Urology, J. A. M. A. **93**: 1942-1944 (Dec. 21) 1929.

feel, is far more difficult to perform than a lumbar tap. In a series of more than 1,400 spinal anesthesias we have failed in only six cases to perform the tap successfully, and in two of the cases successful taps were made at later dates.

Risacher and Waitz [10] in France produced intradural caudal anesthesia for obstetric cases with concentrated solutions of procaine hydrochloride. Pitkin and McCormack [11] in this country report on the use of dextrose and later gliadin added to the solution of procaine hydrochloride to produce intradural caudal anesthesia. After many variations in technic, the use of dextrose was abandoned and the technic I now use is as follows:

The patient is placed on his side in position for a lumbar puncture with the table in 10 degree Fowler position, or in the sitting posture. The field is prepared as for any surgical procedure. The tap is made through the lowest possible interspace by means of a 22 gage lumbar puncture needle with a 45 degree bevel tip. A definite snap is felt as the needle pierces the dura. When the stylet is withdrawn and the first drop of fluid is seen welling up in the hub of the needle, a 2 cc. Luer-Lok syringe is quickly attached and from 0.5 to 0.75 cc. of fluid withdrawn. The syringe is detached, the stylet replaced and from 50 to 100 mg. of procaine hydrochloride crystals dissolved in the spinal fluid. The fluid is slowly reinjected and the patient turned on his back. Use of a 22 gage needle permits these maneuvers without loss of more than 2 or 3 drops of spinal fluid (fig. 2).

For diagnostic and operative cystoscopic manipulations, 0.5 cc. of spinal fluid and 50 mg. of procaine hydrochloride are sufficient; anesthesia of the penis, scrotum, perineum and the area about the anus is produced. For surgical procedures on the external genitals and operations through the perineum, perineal plastic operations in women and similar conditions, 0.75 cc. of spinal fluid and from 75 to 100 mg. of procaine hydrochloride are given. The saddle area of skin anesthesia is much broader.

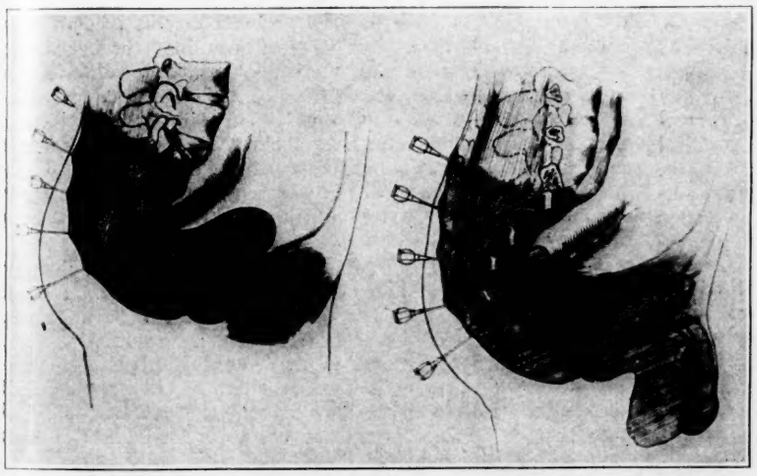

Fig. 1.—Shaded area shows extent of anesthesia produced by sacral block. Introduction of anesthetic solution into the sacral canal and eight sacral foramina is necessary to produce the anesthesia.

For children, the amount of procaine hydrochloride is greatly reduced, depending on the size and weight of the child. In some recent experimental work I have been able to do cystoscopic manipulations with 25 mg. of procaine hydrochloride by varying the position of the patient to cause upward extension of the spinal fluid-procaine hydrochloride solution.

The patient is left in Fowler's position from ten to fifteen minutes, which time allows for fixation of the procaine hydrochloride in the caudal nerve fibers, after which he can be placed in any position. However, most of the procedures mentioned can be done with the patient in this position. If it seems desirable to supplement the anesthesia with abdominal field block for suprapubic prostatectomy, diverticula and other conditions, the patient must be left in Fowler's position from ten to fifteen minutes. I have found it convenient to do abdominal field block during this time. This combined procedure has been used in only six cases in our clinic, three suprapubic prostatectomies, two diverticula and two vesicovaginal fistulas, as in most cases I employ spinal anesthesia for suprapubic prostatectomy and vesical operations.

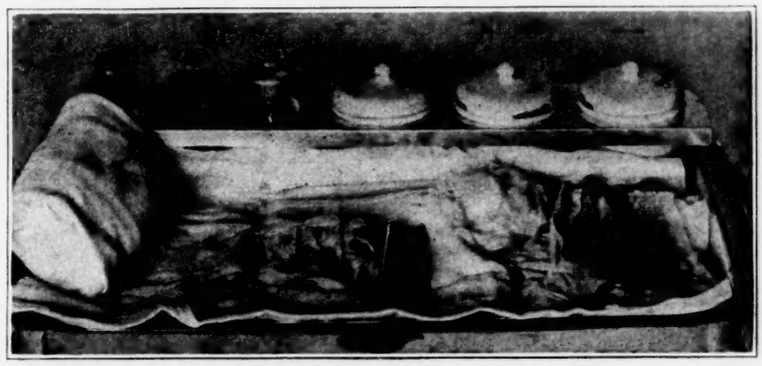

Fig. 2.—Anesthetist's table with cups for ampules and sterile outfit, opened. Note compactness and simplicity of outfit. Unopened pact at left.

Anesthesia begins to take effect immediately following injection and is complete in from three to five minutes.

By the use of this technic, typical caudal anesthesia has been produced in the cases shown in the accompanying table.

There have been no failures and no reactions. The duration of anesthesia has been from one to three hours. Through error one patient was put in a horizontal position, so that anesthesia extended to the umbilicus and involved the legs.

POSTOPERATIVE COMPLICATIONS AND SEQUELAE

Headaches were a complication in a few of the cases early in this series; I felt that these were due to the use of dextrose. Since discontinuing its use I have had no complications or sequelae of any kind. I believe that if the patient is kept flat in bed for twenty-four hours, headaches are not any more likely to follow this procedure than to follow diagnostic lumbar puncture.

CONCLUSIONS

1. It should be the aim of urologists to make cystoscopic examinations and all operative procedures through the cystoscope as painless as possible; better cooperation is obtained from both the patient and the general physician.

2. Caudal anesthesia produces sufficient relaxation of the bladder for complete cystoscopic examination and treatment in all types of cases, the operative procedures are painless, and the work of the operator is greatly facilitated. It also provides a safe and reliable

10. Risacher, S. E., and Waitz, R.: Spinal Anesthesia Limited to the Perineal Region by a Concentrated Solution of Novocain, Bull. Soc. d'obst., et de gynec. **16**: 41 (Jan.) 1927.

11. Pitkin, G. P., and McCormack, F. C.: Controllable Spinal Anesthesia in Obstetrics, Surg. Gynec. Obst. **47**: 713 (Nov.) 1928.

anesthesia for perineal surgery and operations on the external genitals in men, rectal surgery, and perineal plastic operations in women.

3. The method of intradural caudal anesthesia is recommended because of its simplicity and reliability; by a single intradural injection complete sacral block anesthesia can be produced, whereas by the extradural technic the introduction of a needle and anesthetic solution into the sacral canal and into several or all of the eight sacral foramina would be necessary.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BUMPUS, CHUTE AND EWELL

DR. JOHN S. LUNDY, Rochester, Minn.: The agents and methods of producing regional anesthesia as presented by Dr. Bumpus seem to me to be properly evaluated and the urologist will find it well worth his time to familiarize himself with the information which Dr. Bumpus has compiled. With regard to the papers of Dr. Ewell and Dr. Chute, I feel that one is not justified in advocating spinal anesthesia to the exclusion of sacral anesthesia because sacral anesthesia may be more difficult to carry out. It seems to me that sacral block is safer than spinal anesthesia. In advocating spinal anesthesia instead of sacral block in cystoscopy, one must thoroughly consider the headache that may follow spinal anesthesia and commonly does not follow sacral block before spinal anesthesia is used in cystoscopic procedures. I believe that spinal anesthesia gives a greater degree of anesthesia in operations on the bladder for tumor or for diverticula than sacral or abdominal block, but for prostatectomy in elderly patients, certainly in those aged more than 70 years, sacral and abdominal block should be employed; debility is a contraindication for spinal anesthesia. I believe that the technic for using crystals of procaine in spinal fluid is the proper one and I am not satisfied with the methods of using lighter and inferior solutions. Ephedrine helps in supporting the blood pressure in certain cases. Hypotonus is a definite contraindication. I have used it in hypertonus, and although I know it is said to be a contraindication, I have not yet found it so. Untoward reactions from a local anesthetic may be minimized by some derivative of barbituric acid given an hour before the use of procaine, cocaine or any of the anesthetics. It seems to me that this provides protection, owing to the fact that the derivative of barbituric acid prevents the convulsions that may occur. It does not affect the blood pressure or other symptoms but it does stop the convulsions. The caudal injection may be used with an injection in the second sacral foramen on each side, thus securing practical sacral anesthesia with only three points of injection. I have used this frequently with very good success. I do not believe that there are delayed untoward reactions to spinal anesthesia. I am afraid that it may be true that, once a local anesthetic has been given, using an intradural application of an anesthetic, there may be conditions wherein the nerve tissue may be injured by the application of a spinal or local anesthetic, and the spinal cord may not return to full normal function.

DR. EDWARD L. MERRITT, Fall River, Mass.: I was particularly impressed by the remarks of Dr. Ewell and Dr. Chute regarding the use of anesthesia in cystoscopy. I think that more anesthesia should be used in this work. It has been my custom to use nitrous oxide anesthesia in younger individuals when indicated and caudal anesthesia for the aged. I have noted that in many instances physicians, particularly urologists, on being given a cystoscopic examination, have asked for an anesthetic. I hesitate to disagree with such a pioneer in urology as Dr. Chute, especially as he is a former teacher of mine. I cannot, however, believe that it is best for the urologic surgeon to administer the spinal anesthesia himself. I believe that this is a field in itself, and in our hospital the anesthetist himself, a physician, administers practically all anesthesia. He does the spinal as well as most of the others, which leaves the surgeon free for the operating field, and confines the spinal work to the man who is doing nothing but that. Another point is that, as spinal anesthesia is now being used commonly, a great many surgeons have minimized the danger of prostatectomy, both to patients and to the family physicians. I think that this should not be done. Prostatectomy is a serious operation, regardless of what anesthetic is used, and I think that patients should not be fooled into thinking there is nothing to it simply because they can remain awake while the operation is in progress. These patients still have to be prepared as they were before, both the cardiovascular and the renal systems being improved. One should never operate in face of a falling blood pressure. Furthermore, regardless of the type of anesthetic used, one should play safe at all times.

DR. GEORGE GILBERT SMITH, Boston: Before ephedrine came into the field, I not infrequently saw such pictures as Dr. Chute has described. These things are always disconcerting and I have felt that in patients who were old and whose heart muscle was impaired the tremendous drop in blood pressure, followed later by a rise, was very bad for the ultimate prognosis. Since using ephedrine in spinal anesthesia, I have seen nothing nearly as serious as I used to see, and I feel that it has been a great help in enabling one to use this valuable method of anesthesia. Dr. Chute said that he has refrained from using spinal anesthesia in kidney operations, and he also stated that the spinal anesthesia which he produced extended from several inches above the umbilicus downward; but it has been my experience in using spinal anesthesia in much the same way he does to find that in many instances the anesthesia has extended as high as the nipples. I venture to say that if he will watch the anesthesia in every case he will find that it is high enough for any kidney operation. If he were going to use it for kidney work he would probably use more and get it higher, but I think it extends high enough anyway. My experience with sacral anesthesia has not been encouraging. In two cases the needle entered the sacral canal satisfactorily, no blood came back and I made an injection, and almost immediately the patient had a convulsion. I found on rotating the needle that I could aspirate blood and was sure that what had happened had been that the needle had punctured a vein but on aspiration the wall of the vein had been sucked in and I thought I was safe, but I was not. After those two experiences I gave it up. I still employ a carefully given ether anesthesia in about half the prostatectomies I do. It seems to me that in some old men, those whose hearts are poor but whose kidneys show good function, the employment of carefully given inhalation anesthesia over a period of not more than forty-five minutes, which is the usual time for a perineal prostatectomy and certainly is long enough for the second stage of suprapubic prostatectomy, the effect of the ether on the heart was beneficial rather than harmful. I have felt safer using it in cases in which I have been uncertain of the ability of the myocardium to carry the patient through.

DR. ELMER HESS, Erie, Pa.: I was glad to hear Dr. Bumpus say he used cocaine in cystoscopics in the urethra. I think that an acutely inflamed urethra should never have cocaine used on it, nor should it be subjected to cystoscopy. The contraindication to cocaine is the contraindication to instrumentation. I am surprised to hear the discussion on spinal anesthesia. I think there may be some indications for spinal anesthesia but I never want any one to use it on me. I have had some bad experiences with this method. Perhaps I do not know how to use it, but I think that all have encountered some bad effects. I think in the hands of a very good man if he said spinal anesthesia was the only thing for me I might take it, but I am sure I would not want it. I admired the nerve of Dr. Beer, who had a cocaine injection put in his own spinal canal.

DR. MEREDITH F. CAMPBELL, New York: At Bellevue spinal anesthesia, in 1920, was used in five cases but for five years now it has been the routine method for all urologic operations, except when contraindications exist. We have used spinal anesthesia in some 3,000 urologic operations. I know of four instances only in which we have felt very generous in charging the spinal anesthetic with being the cause of death. One of these men died eight hours after prostatectomy; he petered out. One man died within twenty minutes. Artificial respiration was given for half an hour but he did not respond. We do not know what killed him. We could not

correlate the clinical facts at hand and, while we felt that it was a cardiac death, it was charged to the spinal anesthetic. The patient was blue above the clavicle, normal below. In two cases spinal anesthesia was used in men with advanced diabetes suffering extensive perineal infection; these should have had a local anesthetic. The point is that the cases should be selected with some regard to the general condition, and it should always be borne in mind that the patient with a sound body is the best risk. In another hospital I gave a spinal anesthesia, the only time that I ever gave a spinal anesthesia with an aqueous solution, and the man died the next day of a colon bacillus meningitis. On being checked up, the solution used was found to be thus infected. Such accidents are unpardonable. It is well, however, to bring these mortalities to notice. We use ephedrine, giving it about twenty minutes before the lumbar tap is made. I believe the barbital hypnotics (phenobarbital) are preferable to morphine preoperatively. If the anesthetic is adequate pharmacologically, there is no indication for morphine and the administration of a grain of phenobarbital preoperatively will not only quiet the patient's nerves but afford the barbiturate counteraction against possible procaine poisoning. We used a proprietary procaine and strychnine sulphate preparation in about 1,000 cases but gave it up over a year ago. We have returned to the use of crystals of procaine dissolved in spinal fluid, which preparation is giving uniformly satisfactory anesthesias for all types of urologic surgery.

DR. GEORGE H. EWELL, Madison, Wis.: I was particularly impressed with Dr. Chute's paper. He has employed this valuable form of anesthesia wisely and conservatively. His use of spinal anesthesia and the results should tend to banish the unfavorable impression which Dr. Hess seems to have of this procedure. I believe that any one before employing spinal anesthesia should familiarize himself with the physiologic and pharmacologic principles involved, select a technic that impresses him, and then master it and use it. I believe that the majority of accidents referred to spinal anesthesia are preventable; that in many instances they are due to faulty technic. I also feel that it is important to control the height to which the anesthesia extends; one is thus better able to judge the expected fall of blood pressure and therefore better able to combat it by varying the quantity of ephedrine administered. Dr. Stout has developed a technic in which only procaine crystals and varying amounts of spinal fluid are employed. This technic makes it possible to control, with a high degree of accuracy, the height of anesthesia. In other words, if one wishes to amputate a leg one can fairly consistently produce anesthesia of one leg only; if a suprapubic prostatectomy is to be done, one does not feel that it is necessary to produce anesthesia above the umbilicus. In cases of hypertension a larger dose of ephedrine is given than would be otherwise employed. I do not believe that hypotension is a contraindication to spinal anesthesia, unless it is a part of a severe myocardial breakdown which would almost preclude any form of anesthesia with the exception of local infiltration. I have employed spinal anesthesia in severe cases of myocardial degeneration with moderate active auricular fibrillation. In only two cases in my series was headache so severe as to warrant any special attention other than postural treatment. When I employed epidural caudal and sacral anesthesia, I have had a great many patients bitterly complain of soreness of the sacrum and coccyx. I use the barbiturates as a routine before employing any form of local anesthesia. I have been told that German investigators have stated that changes do occur in the myelin sheaths of the spinal nerve roots; however, I have been unable to locate this reference in the literature. New York investigators have noted changes in the dextrose content of the spinal fluid. I cannot agree with Dr. Lundy that in a few years from now spinal anesthesia will be discarded, but I rather feel that it will be more extensively used as more men thoroughly acquaint themselves with it and thoroughly master some technic in performing it.

DR. ARTHUR L. CHUTE, Boston: While I do not believe that the disadvantages brought out by Dr. Hess exist so much as some think they do, I believe that spinal anesthesia should be used because, without an understanding as to what the contraindications were when its use was begun, it was used indiscriminately. Some patients were fine the first day, the next day were drowsy, and so on, and the next day there was some stain but not much hemorrhage; but when these patients died, it was found that they died a renal death and that they had been given a blow they could not stand.

PEPTIC AND DUODENAL ULCER IN TABES DORSALIS*

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AND
JAMES R. LISA, M.D.
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Our object in this paper is to report four cases of gastric and duodenal ulcer with tabes dorsalis. In each instance the patient had been under observation, the clinical diagnosis had been agreed on, and the autopsy had been made.

The combination of ulcer and tabes is uncommon. Not many cases have been reported and there have been very few in which there has been an autopsy. In this country Crohn has done most of the work on this subject; in France, Roux, Carnot and Bruyere. In Germany, also, a few cases have occurred.

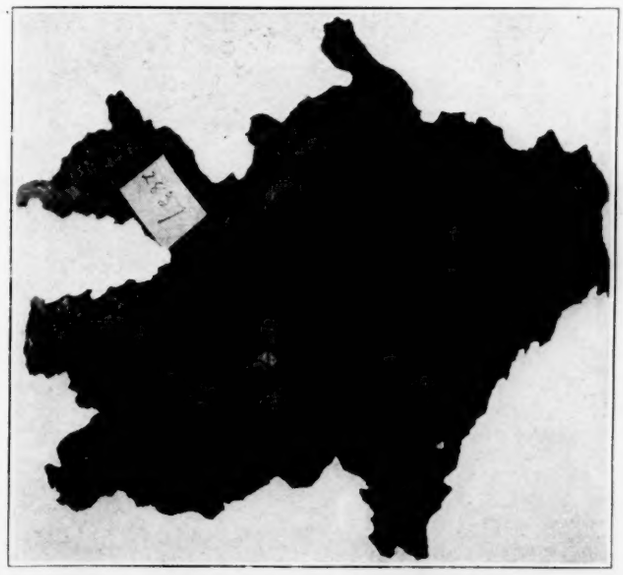

Fig. 1 (case 1).—Chronic perforating ulcer on anterior wall of stomach.

Just why a gastric or duodenal ulcer should complicate tabes is not clear. Some one will suggest that it is akin to the ulcer of the foot and therefore a trophic change. The answer is that the ulcers in our four patients showed no evidence either of syphilis or of a malignant condition, but did show the changes characteristic of the simple ulcer. In none of the ulcers in our patients were spirochetes found. In the trophic ulcer characteristic of tabes, spirochetes are found. The conclusion, therefore, is that the two conditions must be a coincidence, and if four such combinations can be found in one hospital in the same calendar year, the condition must be more common than is supposed. If to this is added the fact that in only one of our patients was a diagnosis made before death, the conclusion must

* Read before the Section on Nervous and Mental Diseases at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

be that the condition is still more common. Neurologists and internists should be on the alert for this combination and suspect every so-called gastric crisis. There is no doubt that some of our patients might have survived had the ulcer been diagnosed.

Fig. 2 (case 1).—Base of ulcer showing destruction of the epithelium with infiltration by lymphocytes and polymorphonuclears and marked fibrosis.

There are two symptoms which occur with the simple ulcer that are almost always absent in the gastric crisis—bloody vomitus and bloody stools.

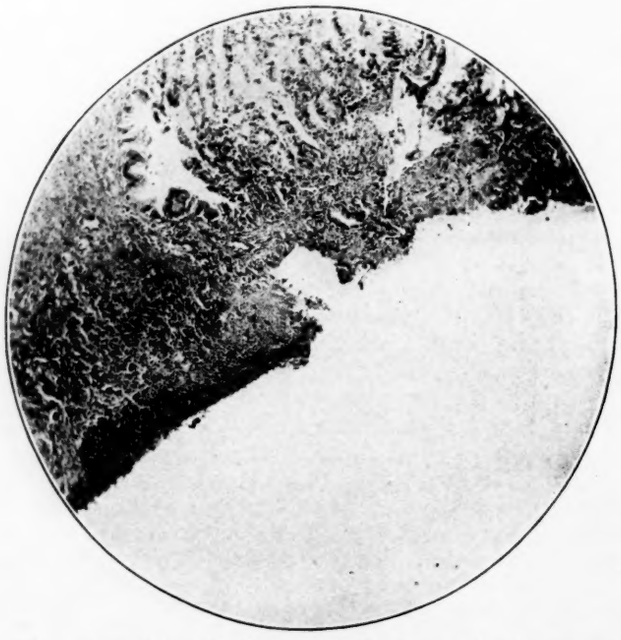

Fig. 3 (case 2).—Infiltration of gastric ulcer by lymphocytes and polymorphonuclears, and fibrosis.

We venture to say that few physicians have ever seen a patient with gastric crisis vomit blood. Oppenheim puts this aptly when he says, "Hematemesis occurs in exceptional cases during the gastric crisis." Bloody stools are also rare in this condition.

At this point we would lay stress on the importance of a Wassermann test and a careful physical examination in every gastric case.

REPORT OF CASES

CASE 1.—E. M., a white man, aged 60, was admitted to the neurologic service of Dr. E. L. Hunt at the City Hospital, New York, Jan. 29, 1928, complaining of being unable to walk. He gave the following history: At 30 he developed a chancre followed by secondary lesions. At 35 he noticed shooting pains in the legs. At 48 his legs became unsteady and gradually the difficulty in walking grew worse. At 57 he lost control of both sphincters. At 60 he was paralyzed. The physical examination showed Argyll Robertson pupils, slight bilateral optic atrophy, a fine tremor of the tongue, slow drawling speech, difficulty with test phrases, absent knee jerks, almost complete loss of voluntary movements, loss of vibratory and pain sensations and incontinence of urine and feces. The blood Wassermann reaction was 4 plus. He died suddenly, February 13.

Fig. 4 (case 3).—Duodenal ulcer adherent to the pancreas.

The autopsy, made five and a half hours after death, revealed syphilis of the heart and aorta, an old cardiac infarction, pulmonary thrombosis, chronic pyelonephritis, taboparalysis, chronic syphilitic leptomeningitis, multiple chronic gastric ulcers, a perforated chronic gastric ulcer, and acute general suppurative peritonitis. The peritoneum was covered by a fibrinous exudate, matting together the small intestines. The pylorus was tightly adherent to the head of the pancreas. On the anterior wall of the stomach was a perforation through the base of an indurated ulcer; on the posterior wall was a smaller ulcer, whose base was adherent to the pancreas. The edges of these ulcers were firm but not hard. Sections made through the ulcers revealed the changes of the simple ulcer. Microscopically there was no evidence either of syphilis or of a malignant condition.

CASE 2.—W. C., a Negro man, aged 60, was admitted to the surgical service of Dr. J. P. Grant, at the City Hospital, New York, March 1, 1928, complaining of abdominal pain and shortness of breath. For one year he had recurring attacks of upper abdominal pain localized slightly to the right of the midline. These attacks developed from four to five hours after meals and were relieved by food, aggravated by hunger and accompanied by nausea but not vomiting, except on two occasions when the vomitus was bloody. The attacks lasted from a few days to a few weeks. Dyspnea on exertion began six months after the onset of the pain. The patient stated that he had not had syphilis. The physical examination showed Argyll Robertson pupils, absent knee jerks and pain on pressure in the region of spontaneous pain. The blood Wassermann reaction was 4 plus. A roentgenogram showed prepyloric ulcer and periduodenal adhesions. Gastro-enterostomy was performed, March 22, and the presence of ulcer was proved. The patient

reacted unsatisfactorily, developed signs of peritonitis, and died three days later.

The autopsy, made four days later, revealed: syphilis of the heart and the aorta, an old cardiac infarction, acute bronchopneumonia, recent gastro-enterostomy, a prepyloric ulcer and an acute general peritonitis. The clinical observations were confirmed.

CASE 3.—R. P., a white man, aged 58, was admitted to the medical service of Dr. H. B. Siglar, at the City Hospital, New York, July 26, 1929. Chancre dated back thirty years. For the past two or three years he had lost weight and had had attacks of dyspnea, and disturbances of vision and walking, together with loss of memory. During this period he received intensive antisyphilitic treatment with mercury and arsenic. The physical examination showed the patient to be chronically ill. The pupils were of the Argyll Robertson type. There was a fine tremor of the tongue. The bladder was distended to the umbilicus. The knee and ankle jerks were absent. The Romberg sign was positive. The sense of motion and position of the toes was lost. The mental reactions were very slow. Both blood and spinal fluid Wassermann reactions were repeatedly negative; the fluid, however, always had increased globulin and cells. The urine contained albumin and pus. Throughout the course of the illness the temperature varied from 99 to 105 and for a month the condition remained the same. August 26, the patient suddenly became cyanosed with a weak and almost imperceptible pulse. He died within six hours.

The autopsy, made twenty-four hours later, revealed: chronic duodenal ulcer with hemorrhage, syphilis of the heart and aorta, bilateral chronic pyelonephritis, ureteral stone, and tabes dorsalis. In the first portion of the duodenum, 3 cm. below the pylorus, was an ulcer measuring 2 cm. The base and edges were slightly irregular and firm. The point of the hemorrhage was in the base. The small and large intestines were filled with tarry contents. Microscopic examination revealed a simple ulcer without evidence either of syphilis or of a malignant condition.

Fig. 5 (case 4).—Duodenal ulcer on anterior wall with second ulcer on posterior wall showing a small thrombosis occluding a branch of the pancreaticoduodenal artery.

CASE 4.—J. H., a white man, aged 45, was admitted to the dermatologic service of Dr. Jerome Kingsbury, at the City Hospital, New York, Dec. 4, 1929, because of a generalized eruption. He stated that he had had a syphilitic infection in 1900 and, for seven years, ataxia and urinary incontinence. For a month weakness had been steadily progressing. He had a generalized late syphilid. The pupils were of the Argyll Robertson type; the speech, slurred; the mentality, impaired; the knee jerks and sense of motion and position were lost, the Romberg was positive, and the left knee was a Charcot joint. Two days after admission he complained of suddenly being

Fig. 6 (case 4).—Section of base of ulcer showing fibrosis and heavy infiltration.

weaker and in a few hours developed an intense anemia of the mucosal surfaces. He died the following day.

The autopsy, made thirty-six hours later, revealed: simple duodenal ulcers with hemorrhage; syphilis of the heart and aorta; tertiary syphilid; Charcot left knee. Five centimeters below the pylorus on the anterior wall was an ulcer about the size of a quarter (24 mm.) with smooth soft edges and a thin base which tore easily. On the opposite posterior wall was a second ulcer. In the base was a small fresh thrombus partially occluding a branch of the pancreaticoduodenal artery, which entered it at a right angle. Black tarry contents were present in the intestines from the lower portion of the ileum to the rectum. Microscopic examination showed a simple inflammatory ulcer with no evidence either of syphilis or of a malignant condition.

COMMENT

The essential points are:

1. The presence of a nonsyphilitic ulcer in a syphilitic patient.
2. The fact that the terminal stage of the disease was due to the ulcer and not to the tabes.
3. The failure to diagnose the ulcer before death.
4. The fact that the diagnosis was overlooked because of the similarity of the symptoms.
5. The fact that in one case there were bloody stools.
6. Proof from the autopsy that the patient had tabes.

41 East Sixty-Third Street—55 East Seventy-Sixth Street.

ABSTRACT OF DISCUSSION

DR. CARL D. CAMP, Ann Arbor, Mich.: I have been much interested in the subject of gastric ulcer in tabes. One would, I think, assume that this association would be quite frequent because of the fact that these patients have syphilis and also because many tabetic patients have trophic ulcers elsewhere in the body. However, it has been my experience that that is extremely rare. Some years ago I had an experience that

made me look carefully for evidences of ulcer in tabetic patients. A case was seen by me outside the hospital and diagnosed as tabes dorsalis. About three weeks later the patient was admitted to the hospital and a repeated examination confirmed that diagnosis. The following morning he began having a severe gastric crisis. He had previously had gastric crises. I had occasion to demonstrate him to a class as a typical case. That afternoon he began vomiting blood. Late in the afternoon I saw him and he semed to be very weak. There was some air hunger and a thready pulse. The surgeon who saw him with me thought it was unwise to operate, that he probably would not survive. He died in the evening. I thought that probably there was a gastric ulcer that I had not diagnosed, but at the autopsy the following morning no gastric or duodenal ulcer was discovered. The blood had been bright red, not frothy, and in fact no source for the hemorrhage was found. However, from then on I took particular pains to examine tabetic patients or have them examined roentgenographically and by other methods, and also to examine patients who had gastrointestinal symptoms for the presence of blood; I found that, contrary to the general opinion, in gastric crises bleeding is not uncommon. The amount is not large, it is generally conceded, but in some cases it may be very definite and in the case that I mentioned it was a contributory cause to death. The diagnosis from the purely clinical side must be extremely difficult because of the probable association with the gastric crisis, and the fact that deep pain sensibility may be lost in tabes may make the ordinary clinical evidence of gastric ulcer unavailable. But by roentgen and by laboratory methods I think this diagnosis should be made. I agree with the authors thoroughly that it is an important point and a difficult diagnosis.

DR. EDWARD LIVINGSTON HUNT, New York: As I left St. Luke's Hospital yesterday the intern told me he had a fifth case which I could have added to this collection of four had I known of it a day or two sooner. It was another case of tabes with a duodenal ulcer.

COMPARATIVE BIOLOGIC AND HISTOLOGIC STUDY OF LYMPH GLANDS FROM SYPHILITIC PATIENTS*

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AND
SIGMUND S. GREENBAUM, M.D.
PHILADELPHIA

Several investigators have studied the inguinal lymph glands removed from patients with syphilis. In each case the phase studied was somewhat different from the other. Our object in the present study has been to correlate the finding of *Spirochaeta pallida* in inguinal lymph node sections by the silver impregnation staining method and, with the biologic method, by injecting an emulsion from the same lymph node into rabbit testes. By this correlation we hoped to throw some additional light on the morphology, the efficiency of our staining methods, the importance of the biologic method for diagnosis and, in an indirect way, something about the transmissibility of *Spirochaeta pallida*.

MATERIAL AND METHOD OF STUDY

Inguinal lymph glands were removed from twenty-one patients with untreated syphilis. In all the patients the Kolmer-Wassermann and Kahn reactions were strongly positive, and, in addition, most of them had some clinical manifestation of syphilis. The excised lymph glands were bisected and rabbits' testes were inoculated with an emulsion of one half. The other half was divided into two parts: one for staining with the Levaditi method and the other with hematoxylin-eosin. The excised lymph nodes were one from primary, eleven from secondary, two from tertiary and seven from latent cases of syphilis. In all instances the first tissue transplants were made into two rabbits which were kept on a specially devised diet.[1] After four months, all the animals that were negative for syphilis were killed and their popliteal lymph glands removed, emulsified and injected into another set of rabbits. Eight second transplants were made in the whole series of twenty-one cases.

After the rabbits "came up," the diagnosis was verified by dark field examination. Nine of these syphilis-positive rabbits were killed and sections from the testicle, lymph nodes, liver, heart, aorta, lungs, kidney and spleen were removed and studied histologically for pathologic changes. For the staining of *Spirochaeta pallida* we used the Levaditi method. Control tissue known to contain the organism was used with all the sections.

RESULTS

The accompanying table shows the results in a concise form.

Results of Histologic Sections and Biologic Experiments

No.	Clinical Type	Results: Levaditi Human Gland	First Transplant	Second Transplant	Levaditi Rabbit Tissue
1	Secondary	Negative	Positive 76 days	.....	Positive
2	Latent	Negative	Positive 68 days	.....	Positive
3	Secondary	Negative	Positive 38 days	.....	Positive
4	Secondary	Positive	Positive 28 days	.....	Positive
5	Secondary	Positive	Positive 43 days	.....	Positive
6	Secondary	Negative	Positive 51 days	.....	Positive
7	Secondary	Positive	Positive 70 days	.....	Positive
8	Secondary	Negative	Positive 73 days	.....	Positive
9	Tertiary	Negative	Negative	Positive 81 days	.....
10	Latent	Negative	Negative	Negative	.....
11	Latent	Negative	Negative	Negative	.....
12	Secondary	Positive	Positive 68 days	.....	Positive
13	Tertiary	Negative	Negative	Negative	.....
14	Latent	Negative	Positive 87 days	.....	.....
15	Latent	Negative	Negative	Positive 72 days	.....
16	Latent	Negative	Positive 77 days	.....	.....
17	Secondary	Negative	Negative	Positive 63 days	.....
18	Secondary	Negative	Negative	Negative	.....
19	Primary	Positive	Positive 65 days	.....	.....
20	Latent	Negative	Negative	Negative	.....
21	Secondary	Negative	Positive 70 days	.....	.....

Spirochaeta pallida was demonstrated in five of the twenty-one human inguinal lymph glands studied with the Levaditi method. In two sections the organisms were numerous (fig. 1), and in the other three only an occasional one was noted. However, in most of the sections there were small, black, mostly intracellular, granules which were suggestive of being spirochetal granules (fig. 2). The clinical diagnosis in four of the positive sections was secondary syphilis and in the fifth it was primary syphilis. Thirteen of the inoculated rabbits

* From the Research Institute of Cutaneous Medicine.
* Read before the Section on Pathology and Physiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

1. Greenbaum, S. S.: Rabbit Health Factor in Experimental Rabbit Syphilis, Am. J. Syph. **14:** 231 (April) 1930; Tissue Transplants in the Diagnosis of the Cure of Syphilis, with Especial Reference to Lymph Nodes, Skin and Leukoplakia, J. A. M. A. **94:** 1464-1466 (May 10) 1930.

became positive following the first transplant. The time varied from 28 to 87 days. Three rabbits became positive after the second transplant, and in the remaining five the animals were negative in the first and second transplants. The rabbits injected with the human glands in which spirochetes were demonstrated "came up" in 28, 43, 70, 65 and 68 days. In comparing this with the other eight we find little difference in the average number of days.

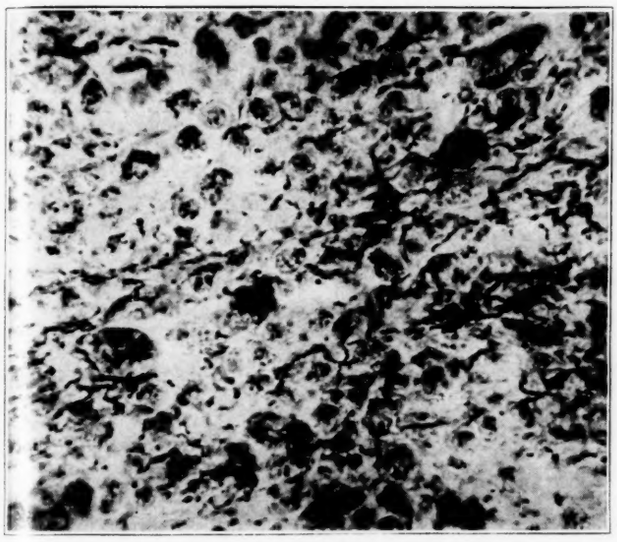


Fig. 1.—Spirochetes in human lymph gland section.

Spirochaeta pallida was demonstrated in all testicular sections of the animals (fig. 3). In one animal, rabbit 8, we found fragments of the organism in all the sections. The heart showed them in two cases, 8 and 3, and the lymph glands in four cases. Of the eight cases in which second transplant was made, three became positive after 81, 72 and 63 days. The remaining five never "came up."

The hematoxylin-eosin stained sections showed nothing remarkable besides the well known generalized reaction of tissue to *Spirochaeta pallida*.

In three of twenty-one human lymph glands we were able to demonstrate the tuberculoid phenomena as described by Michelson.[2] Two of them were from patients with secondary syphilis.

COMMENT

In a previous publication by one of us[3] the possibility of morphologic changes occurring in *Spirochaeta pallida* was suggested because of the absence of the organism from the tissues studied with the Levaditi method. A similar suggestion was made by McCord,[4] who stained, with the Levaditi method, the tissues of 189 syphilitic fetuses and found *Spirochaeta pallida* in only sixty-one cases. He thought of the possible occurrence of another species of some granular form.

A few observers have described a granular form of *Spirochaeta pallida*. Although these observations have been inconclusive, the possibility of the occurrence of such a form is claiming more adherents. Our observations have a tendency to support the view that this organism, or at least certain strains, undergoes morphologic changes or modification in its life cycle.

Despite the fact that human tissue emulsions produced syphilis in inoculated animals, we were unable to find *Spirochaeta pallida* in such human tissue after a most thorough search. This happened in eleven of the sixteen rabbits that became positive after the first and second transplants. On the other hand, the fact that in most of the human gland sections, and later in some of the animal sections, we observed intracellular, few extracellular, dark staining granules in tissue known to contain spirochetes but not microscopically demonstrable as such is certainly suggestive. Although some of these granules may represent a granular stage of *Spirochaeta pallida*, it is our belief that most of them are, however, phagocytosed organisms.

Since the animal testes contained millions of the organisms and yet the lymph glands showed, mainly, granules in the lymphocytes, we infer that the lymphocytic cells play a great part in the spirochetal disintegration.

Levaditi and his co-workers[5] described in a recent publication the various granular bodies found in the lymph glands of rabbits in which it was impossible to demonstrate *Spirochaeta pallida* but which contained the virus because they were infectious. Certain obscure features of syphilitic infection could be explained, according to these authors, if such an evolutionary or granular stage of *Spirochaeta pallida* is accepted.

In this connection it is interesting to note that Calmette[6] has recently reported on the presence of a filtrable tuberculosis virus and its possible transformation into bacilli.

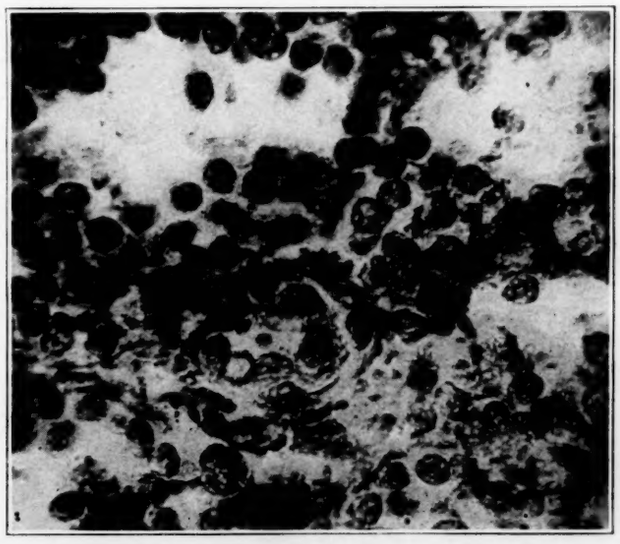


Fig. 2.—Granules in human lymph gland section.

Warthin, in this country, and Levaditi abroad, deserve all the credit for devising and developing our present technic for staining *Spirochaeta pallida* in the tissues. We used the Levaditi method because in our hands it gave the best results. Much to our regret, we have not been able to obtain satisfactory results with

2. Michelson, H. E.: The Occurrence of Tuberculoid Reactions in the Inguinal Glands in Early Syphilis, Arch. Dermat. & Syph. **19**: 66-73 (Jan.) 1929.

3. Saleeby, E. R.: A Study of Testes from Syphilitic Patients: Histologic and Inoculation Experiments, Am. J. Syph. **10**: 215-221 (April) 1926.

4. McCord, J. R.: Study of Two Hundred Autopsies Made of Syphilitic Fetuses, Am. J. Obst. & Gynec. **18**: 597-601 (Oct.) 1929.

5. Levaditi, Constantin; Scoehn, R., and Sanchis-Bayarri, M. J.: Granular Forms of Syphilitic Virus, Ann. de l'Inst. Pasteur **42**: 475-494 (May) 1928; abstr. J. A. M. A. **91**: 432 (Aug. 11) 1928.

6. Transformation of the Filtrable Tuberculosis Virus into Bacilli, Paris Letter, J. A. M. A. **94**: 1333 (April 26) 1930.

the methods of Dieterle [7] and of Warthin.[8] While these methods are directed toward staining the mature spirochetes, it is evident that some modified technic is highly desirable to study morphologic changes when such exist. We found granules in the lymph glands which we believe are spirochetal products but this observation is not conclusive, although it is strengthened by the results of our biologic study. Whether or not the phagocytosed and disintegrated spirochetes are able to regenerate is a question to be determined.

It is also important to devise a method by which the spirochetes take a differential stain and at present our attention is directed in that line.

The biologic method cannot be recommended as a routine measure for the clinical diagnosis of syphilis. Of the twenty-one rabbits injected, only sixteen became positive after the two transplants. It might be of value in the doubtful cases as in those in which the blood reaction is negative.

The occurrence of the conceptional transmission of syphilis has never been proved, although a few cases believed to be hereditary syphilis have been reported.[9] But, if further work shows that there is an ultramicroscopic syphilitic virus, and the life cycle passes through a granular stage, the possibility of conceptional transmission has to be favorably considered.

SUMMARY AND CONCLUSION

The inguinal lymph glands from twenty-one syphilitic patients were removed and studied histologically and biologically. In five cases we were able to find *Spirochaeta pallida* in the sections while in others only dark stained granules were observed.

In the animals, thirteen became positive after the first transplant and three after the second transplant. The organs from nine of the positive rabbits were studied histologically for spirochetes. The testes were positive in all the cases, the lymph glands in five and the heart and aorta in two. Dark stained granules were present in most of the lymph glands, and in the heart and aorta in one. These granules were mainly in the lymphocytes.

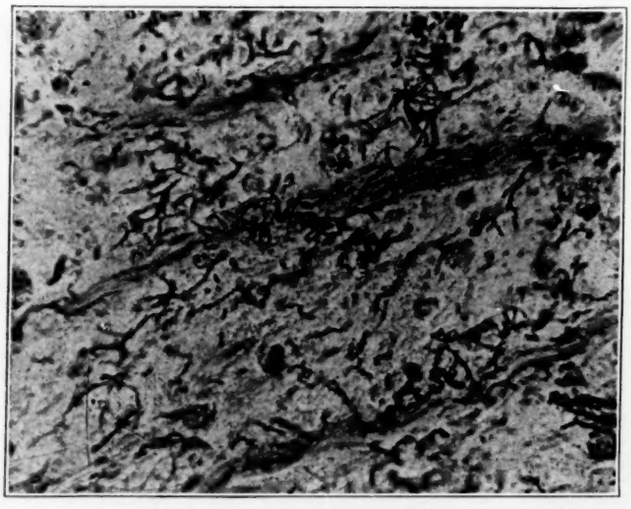


Fig. 3.—Spirochetes in rabbit testicle section.

The results obtained in this study tend to compare the histologic and biologic methods with the clinical and laboratory diagnosis. They suggest the possible occurrence of a granular form of *Spirochaeta pallida* or some other species which cannot be definitely identified with our present diagnostic methods and present knowledge of the life cycle of this organism. Also they tend to show that the failure to find the organism in the remote tissues is partly due to the fact that after leaving the original focus of infection the majority of them are broken up into granules, probably by phagocytic cells, before going into the circulation. This is probably accomplished by the lymphocytes, as evidenced by the accumulation of the previously described granules in the lymphocytic cells of the lymph glands.

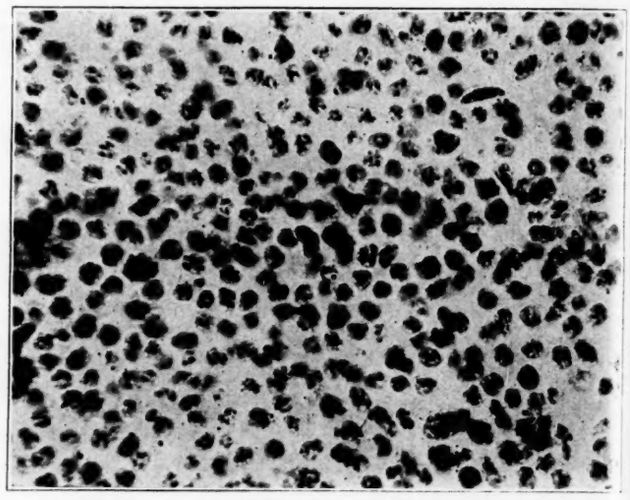


Fig. 4.—Granules in rabbit lymph gland section.

225 South Eighteenth Street.

7. Dieterle, R. R.: Method of Demonstrating Spirochaeta Pallida in Single Microscopic Sections, Arch. Neurol. & Psychiat. **18**: 73-80 (July) 1927.

8. Warthin, A. S.: A Silver-Starch-Gelatin Method for the Demonstration of Spirochetes in Single Tissue Sections, Am. J. Syph. **13**: 454 (July) 1929.

9. Nabarro, D. N.: Some Problems Associated with Transmission of Syphilis to the Second and Third Generations, Brit. J. Ven. Dis. **3**: 218-243, 1927.

ABSTRACT OF DISCUSSION

DR. CARL J. BUCHER, Philadelphia: This interesting paper presents a method for the experimental study of syphilis. It is probably applicable to the study not only of the spirochetes of syphilis but also of other spirochetes. I have been working with the spirochetes from pulmonary abscesses and this granule proposition has cropped up from time to time. The pulmonary spirochetes do not disintegrate as readily as the literature would have one believe. I have kept some for hours in an incubator and have found them viable on subsequent examination. I do not know whether these granules represent the organisms. I believe that in the present state of knowledge one should be hesitant about drawing conclusions concerning their nature. Granules may come from many sources.

DR. WILLIAM C. MACCARTY, Rochester, Minn.: Maybe I am not right, but I feel that the authors might be a little too conservative in their use of the biologic test. Perhaps I am not in a position to discuss the matter, but I am wondering whether the positive biologic test might not be of value since I noticed that many of the injections were positive when the spirochetes were not found in the human tissues. I know it is often difficult to find the spirochetes. It might be a good plan to try the biologic test. If it is positive, all right; if it is negative, no conclusions should be drawn from it. I mention this because frequently in a surgical laboratory one finds tissues in which a diagnosis of syphilis cannot be made though it is thought that the condition might be syphilis. I have been conservatively trained on the histologic diagnosis of syphilis. I should like to take some of this tissue and inject it into an animal.

TREATMENT OF FRACTURES OF THE HEAD AND NECK OF THE RADIUS*

J. ALBERT KEY, M.D.
ST. LOUIS

In spite of the many papers that have been published on fractures of the upper end of the radius during the past few years, there is at present considerable disagreement even among well qualified bone and joint surgeons as to the proper procedure to be adopted in any given type of lesion. In this paper I shall classify the various fractures encountered in the head and neck of the radius and outline the treatment which I believe should be instituted in each type.

One reason that there is so much disagreement in regard to the treatment is that many surgeons are inclined to judge their results by the amount of flexion and extension at the elbow and to ignore the facts that rotation of the forearm may be limited or painful or both, that the arm may be weaker than normal, or that the elbow may be subject to periods of pain after mild strain or with changes in the weather. To my mind, an elbow with only half of the normal range of flexion and extension and permitting full painless rotation of the forearm is a much more useful member than one that has the normal range of flexion and extension but very little motion in pronation and supination. The same is true of pain. Pain is a real disability and if it persists it demands surgical intervention. The causes of disability in a joint are limitation of motion, instability and pain, and the greatest of these is pain.

The head of the radius enters into two physiologically distinct joints: (1) the elbow joint proper, which permits flexion and extension of the forearm on the arm, and (2) the superior radio-ulnar joint, which permits rotation of the forearm. In the adult elbow joint proper the head of the radius is relatively unimportant, as the stability of the articulation is largely dependent on the joint between the humerus and the greater sigmoid of the ulna. Of course it does contribute to the lateral stability of the elbow, especially when the forearm is extended, but a quite stable elbow remains after the head of the radius is removed, and its removal in no way interferes with the movements of flexion and extension and does not seem to lead to the development of an arthritis in the joint as one might expect from the fact that the cartilage of the capitellum has lost its function and probably goes on to fibrosis.

It is true that the head of the radius does aid in transmitting force upward through the forearm to the humerus, but after it is removed this function is taken on by the interosseus membrane and relatively little disability in this respect follows its removal. It must also be pointed out that fractures of the upper end of the radius are rarely ever the cause of limitation of flexion and extension of the forearm unless loose fragments of the radius are set free in the elbow joint.

Quite the reverse is true of the rotation of the forearm. The convex border of the disklike radial head rotates in the lesser sigmoid of the ulna and is grasped by the orbicular ligament and held close in its socket. In order that it may rotate freely, its entire circumference must be smooth and its outline must be that of a perfect circle. Since its range of movement in rotation is approximately 170 degrees, it can be readily seen that any distortion in the outline of the head will cause the upper end of the radius to move outward and inward as it is rotated. Likewise, any roughening of the inner border of the head will result in undue friction when this moves across the lesser sigmoid of the ulna. Roughening of its outer border is less important as the fibrous tissue of the orbicular ligament is more pliable and resistant to the friction of an irregular surface than is the cartilage of the lesser sigmoid fossa. Consequently any fracture which causes the head of the radius to become ovoid or egg shaped in contour, or which results in an irregularity in the smooth contour of the inner half of the circumference, may be expected to cause permanent limitation of rotation of the forearm, a variable amount of pain on motion, and eventual traumatic arthritis in the radio-ulnar joint and in the elbow joint proper.

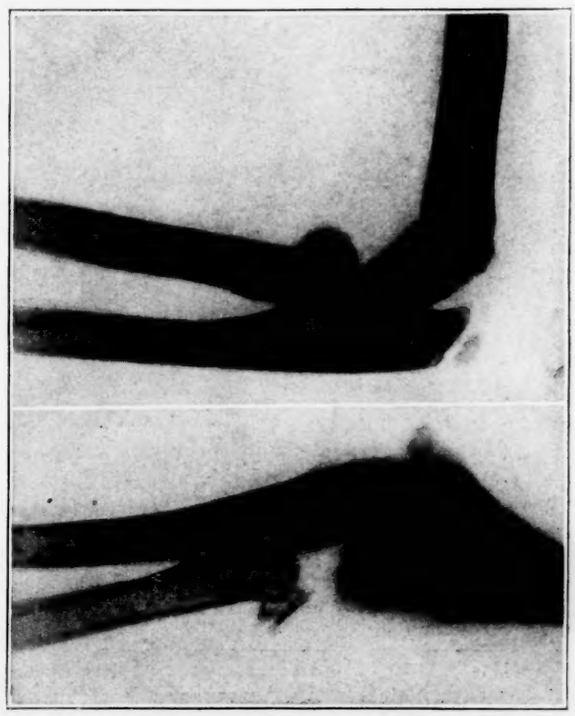


Fig. 1.—Fracture of the neck of the radius in a girl, aged 9 years.

The same results may be expected to follow any fracture of the neck of the radius which results in a permanent displacement of the head of the radius so that it remains oblique to the long axis of the shaft or more distal than normal. If it is displaced downward it no longer rests in the sigmoid and its cartilaginous border will soon degenerate from friction and lack of contact with a similar smooth surface. If the head is oblique and its inner border remains in the lesser sigmoid, the mechanics of the joint are upset and rotation is limited and the abnormal and unequal pressure on the head of the radius leads to degeneration of the cartilage and traumatic arthritis. Consequently deformity or displacement of the radial head may be expected to result in limitation of rotation of the forearm and pain in the joint, with the definite possibility of a generalized traumatic arthritis of the elbow.

What happens to the rotation of the forearm if the head of the radius is removed? A good deal depends on how and when the operation takes place. If the operation is properly done and the orbicular ligament is reconstructed, and if the elbow is in other respects

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

normal, one may expect a normal range of rotation in the forearm, freedom from pain, and almost normal power and stability of the elbow. If the operation is improperly done and if the tissues are unduly traumatized or an unduly long or short or jagged neck of the radius is left, little or no benefit may be expected. The same is true in those cases in which the operation is postponed until marked traumatic arthritis in the elbow and fibrosis of the surrounding tissues have developed.

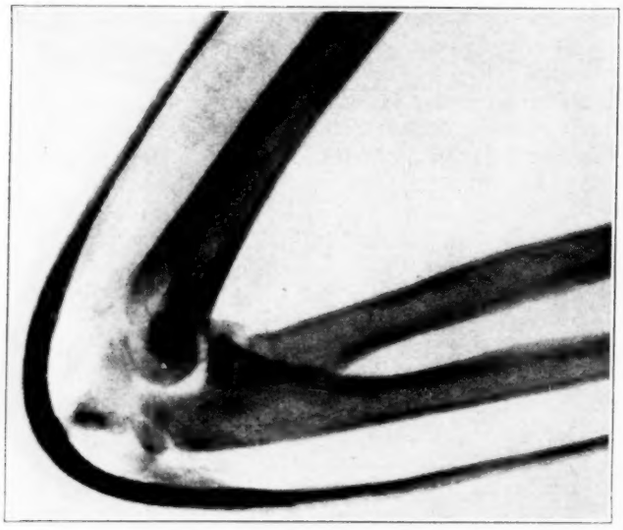


Fig. 2.—The same case as in figure 1 after operative replacement of the head of the radius and immobilization in a posterior plaster mold.

From the standpoint of treatment, fractures of the upper end of the radius may be divided into three groups: (1) those which should be treated conservatively; (2) those which should be treated by open operation, and (3) those which should be treated expectantly and operated on later if necessary.

FRACTURES THAT SHOULD BE TREATED CONSERVATIVELY

The first group includes: (1) fissure fractures of the head; (2) chip or chisel fractures of the head in which the detached fragment comprises less than one third of the circumference of the head and is not displaced or does not lie against the ulna, and (3) fractures of the neck in which there is practically no displacement of the upper fragment. In these, all that is necessary is to immobilize the elbow and forearm in a position of moderately acute flexion for from two to four weeks. This is conveniently and efficiently done by a posterior plaster mold reaching from the upper arm to the base of the fingers and suspended by a clove hitch or cravat sling.

When the mold is removed, the wrist is suspended from the neck by a Jones sling and active motion is begun. The sling should be lengthened gradually, but the patient should fully flex the elbow several times daily. If he begins to lose flexion, the sling should be shortened for a few days. Definite exercises in rotation should be prescribed as soon as the mold is removed. Normal motion may be expected in from six to eight weeks after the accident.

Other than the graded exercises, no physical therapy is necessary or indicated. Forcible manipulations are to be avoided. If the fracture is of such a type that disability will result, all the physical therapy in the world will not prevent it but will only prolong the patient's disability by postponing operation. It is high time that surgeons recognized the fact that a disorganized joint cannot be restored to normal function by physical therapy.

FRACTURES THAT SHOULD BE TREATED BY OPERATION

The second group includes: (1) comminuted fractures of the head; (2) chip or chisel fractures of the head in which a fragment larger than a third of the head is detached and displaced or in which a small fragment next to the ulna is displaced, and (3) fractures of the neck in which the head is displaced downward or so tilted that its rounded border can no longer rotate in the sigmoid of the ulna and in which the displacement cannot be reduced by manipulation (and this means practically all of them).

Unless there is some definite contraindication, such as shock from other injuries, local infected abrasions or lacerations, or another fracture in the vicinity, the fractures in this group should be operated on immediately, as conservative treatment is merely a waste of time.

In adults, the head should be removed.

Technic of Operation.—A posterolateral longitudinal incision about 3 inches long directly over the head of the radius is carried down to the muscles, and the extensor carpi radialis longior and brevior are separated to expose the capsule of the joint and the annular ligament. The collateral radial ligament and annular ligament are incised from the lateral epicondyle to the recessus sacciformis around the neck of the radius and retracted to expose the radial head and neck. The loose fragments are first removed; then, if the neck

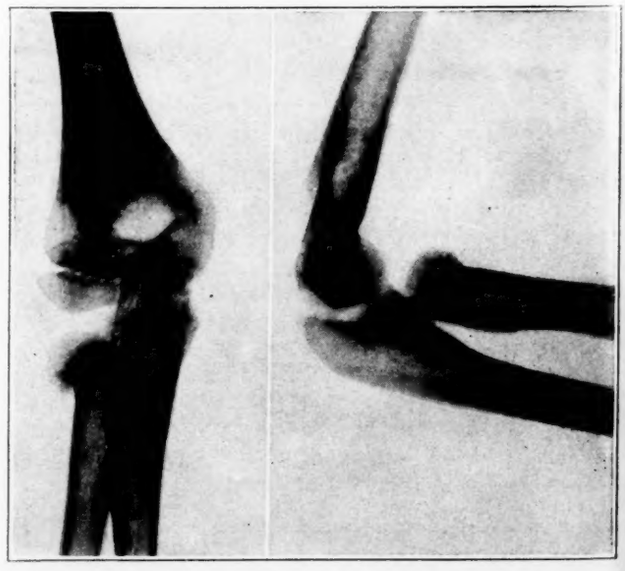


Fig. 3.—Fracture of the neck of the radius in a boy, aged 10 years.

is fractured, the head is loosened at the site of the fracture and removed by sharp dissection and the stump of the neck carefully smoothed off with rongeur forceps.

If the neck is intact, it is rather difficult to excise the head without undue trauma. A Gigli saw cannot be used because the edges of the wound cannot be retracted far enough. Consequently the neck must be cut with a very sharp small thin osteotome or with bone cutting forceps, care being taken not to split the neck. This can be avoided by cutting close to the head and, if the

forceps are used, by cutting a little of the cortex at a time, using only the points of the forceps.

After the head is removed, the periosteum is pushed down and about one-fourth inch of the stump of the neck is removed and smoothed off with rongeur forceps, care being taken not to leave loose fragments of bone in the joint. The shreds of periosteum and surrounding tissues are then closed over the stump of the neck with a single purse string suture of 00 chromic catgut, the ligaments are sutured, and the wound is closed in layers and a posterior plaster mold applied. The after-treatment is similar to that described for nonoperative cases.

In children, the head of the radius is largely cartilage and consequently it is rarely broken, but fractures of the neck with displacement of the head are not rare. It is to be emphasized that these fractures in children may be treated much more conservatively than can similar lesions in adults. If the displacement is slight, the fracture should be treated conservatively with the expectation that growth will correct the slight deformity. If the displacement is marked, open operation is indicated and this should be done as soon as practicable after the injury; but the head of the radius should not be removed as is recommended in adults for the same type of fractures.

In children the head can be manipulated or picked out and put back in its normal position on the neck and held in position by placing one or two sutures of fine catgut in the periosteum of the neck and then suturing the annular ligament around it. In this operation it is important that the elbow and forearm be placed in a position in which the head is fairly stable (balanced) on the neck (a flexion of 45 degrees in a midposition between pronation and supination in my cases) before any sutures are placed. This position can be found by manipulating the forearm and may vary in individual cases. After the head is placed in position, the forearm should not be moved until the wound is closed and the posterior plaster mold has hardened. This is of great importance, as slight movement may displace the head, which is fixed very insecurely on the neck.

Within the past year I have replaced the head in two cases in children and both now have approximately normal motion in flexion, extension, pronation and supination, normal power in the forearm and no pain. I have not attempted to replace it in adults.

FRACTURES THAT SHOULD BE TREATED EXPECTANTLY

The third group includes all doubtful cases of group 1; that is, cases with chip fractures or fractures of the neck with slight displacement, in which the surgeon feels that conservative treatment may yield a satisfactory elbow, chip fractures with considerable displacement of the detached fragment which may be loose in the joint, and fractures of the neck with complete and extensive displacement of the head, which usually lies embedded in the tissues beneath the flexor muscles of the forearm and can no longer block motion at the elbow.

In all of these, conservative treatment may be given a fair trial; but the patient should be told that it may be necessary to operate on the elbow at a later date and remove a small piece of bone that is blocking motion. The surgeon should make his decision about six or eight weeks after the injury and not wait until traumatic arthritis has developed in the elbow joint, because if he does the benefits to be obtained by the operation will be greatly lessened, if not completely lost.

In compound fractures of the elbow region, especially of the olecranon which must be debrided and sutured and which are complicated by a severe fracture of the upper end of the radius which warrants removal of the head of the radius by a separate incision, the fracture of the radius should be ignored until the wounds have healed and the other fractures united. Then (six or eight weeks after the injury) the head can be removed under satisfactory aseptic precautions.

CONCLUSIONS

Certain fractures of the upper end of the radius should be treated conservatively, others should be treated by immediate operation with either removal or replacement of the head, and others should be treated expectantly and the head removed later if necessary.

The fractures that should be treated by each of these methods are enumerated.

In children, the displaced head of the radius can be replaced by open operation and a practically normal elbow and forearm may be expected.

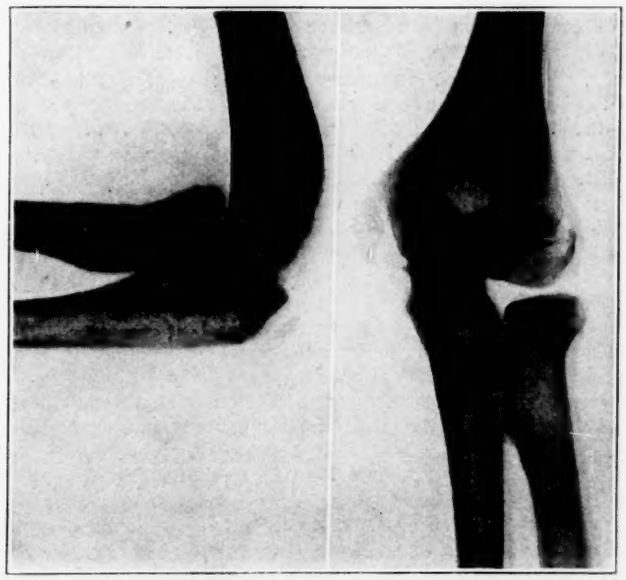


Fig. 4.—The same case as in figure 3 nine months after operative replacement of the head followed by immobilization for four weeks in a posterior plaster mold. Functional result perfect.

After early removal of the head of the radius, a satisfactory but not a normal elbow and forearm may be expected.

Traumatic arthritis is the result of function in a disorganized joint, and late removal of the head of the radius after the arthritis has developed will not as a rule cure the arthritis.

Grand and Washington boulevards.

ABSTRACT OF DISCUSSION

DR. B. J. HEIN, Toledo, Ohio: I agree with the author's three classifications as to treatment. There are, however, some factors which enter into the end-result in these cases of which I should like to speak. I reviewed twenty-five cases of fracture of the head of the radius for the last ten years and some interesting facts were discovered. Twenty are over two years old; five, over five months. Fourteen were displaced, of which ten were resected. Eleven were not displaced and were treated conservatively. All but two cases were in adults. In all these cases I believe I have followed out Dr. Key's line of treatment. The complications were interesting and probably account for the fact that one so often finds a limitation in extreme

extension of the forearm at the elbow. There were seven dislocations of the elbow accompanying these fractures; six were posterior and in one the radius was dislocated anteriorly. All had to be replaced under anesthesia. The tip of the coronoid was fractured once and the olecranon twice; the lower end of the humerus was fractured once, making formidable complications about the elbow in eleven of the twenty-five cases. These no doubt influenced the final results and should be considered when prognosing a case. The dislocations were of sufficient frequency that they may be considered part of the process which fractures the upper end of the radius. I believe that a force being exerted along the radius forcing the head against the capitellum, causing the head to fracture, if carried to extreme, will cause either a posterior dislocation at the elbow or an anterior dislocation of the radius, depending on the position of the elbow when the force is exerted. This force can also account for the fractures of the coronoid process and of the olecranon. This is important for it signifies that there has been a severe degree of ligamentous injuries to other ligaments about the elbow besides the orbicular. Probably in many of the other cases there were varying degrees of damage to these ligaments but, because there was no frank dislocation present, the degree of damage could not be determined. Dr. Key spoke of return of function in from six to eight weeks. I believe that is a little too soon in most cases. To sum up, for conservative treatment one must have perfect position of fragments in order to obtain a good result, otherwise, resection should be done early.

DR. WILLIAM E. BLODGETT, Detroit: I should like to emphasize three things that seem to me to be worthy of emphasis. The first thing is that osseous imperfection in children is not so threatening of later functional disturbance as it is in adults. The second thing is that this fracture of the head of the radius is a threat at the rotation of the forearm, that the hand is the precious part of the arm and that disturbance of rotation is a greater disturbance of the hand function and therefore of the valuable use of the arm than disturbance of extension or flexion. For this reason it seems to me that one should strive in every way to preserve full rotation as being foremost. Occupation is more important than full extension and full flexion. The third thing is a corollary of the previous consideration, that the other common disturbance of rotation, of supination and pronation, is from the lower radio-ulnar joint and that there is a comparability between this joint, the radio-ulnar joint, and the upper radio-ulnar joint, and that fractures such as Colles' fractures, which disturb or threaten rotation of the arm by disturbance of the lower radio-ulnar joint, may be treated by resection of the lower end of the ulna in the same way that the upper joint is coming to be treated in a standardized way by resection of the upper end of the radius.

DR. J. ALBERT KEY, St. Louis: It was not my intention to leave the impression that resection of the head of the radius resulted in a perfect arm. I tried to give the impression that early resection relieved pain and restored motion but resulted in some loss of power. It was for this reason that I divided these fractures into three groups, because if a perfect arm could result by resecting the head of the radius, the operation would be done in a great many more cases. I see certain cases in which I don't know whether the patient will get a better result by conservative treatment or by resection. I agree that the damage which one finds after operation is frequently considerably more than one expected from a study of the roentgenograms; at least, that is what happens to me. There are certain cases in which no one can say honestly that a crippled arm will result unless the head is resected, and a great many surgeons who are conservative in their attitude report excellent results in these borderline cases. That is the reason I give the patient a period of four to eight weeks, depending on the case. I do not mean that function is completely restored at that time. But the interval gives the surgeon a chance to study the case and make a prognosis and decide whether or not resection is justified. The only contribution that I feel I have made is the replacement of the head in children. In the literature I have not found that this has been done. In children one cannot afford to remove the head on account of growth, and it is worth while to put these heads back in approximately the normal position and as a result obtain a normal elbow.

ROENTGEN DIAGNOSIS OF SMALL PLEURAL EFFUSIONS

A NEW ROENTGENOGRAPHIC POSITION *

LEO G. RIGLER, M.D.
MINNEAPOLIS

The early diagnosis of small pleural effusions was greatly advanced with the introduction of the roentgen method of examination. With the rapid improvement in roentgenoscopic and roentgenographic technic, accurate diagnosis can now be made at a relatively early stage. It has been estimated by Emerson [1] that it is almost impossible, by physical diagnostic methods, to detect a pleural effusion less than 250 cc. in amount, and usually effusions less than 400 cc. cannot be diagnosed. Ganter [2] believes that less than 400 cc. of fluid in the pleural cavity can hardly be diagnosed by the usual methods of roentgen examination, although he was able to detect 150 cc. when pneumothorax also was present.

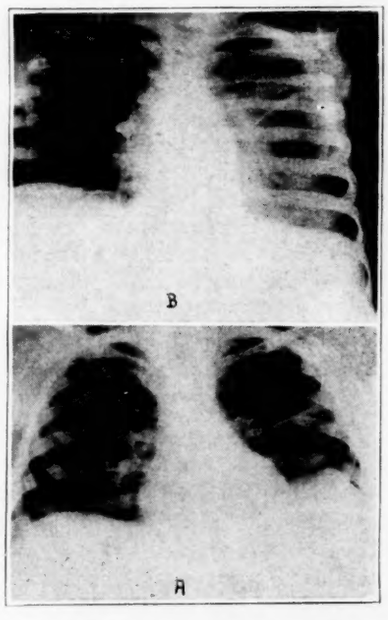


Fig. 1.—Appearance of fluid in a case of left pleural transudate secondary to chronic nephrosis: *A*, upright position: The fluid has accumulated at the base just over the diaphragm and the appearance suggests a high diaphragm rather than effusion. *B*, supine position: There is a diffuse density throughout the left lung, the fluid having spread out in a thin layer as a result of the change in position of the patient. The extreme mobility of the fluid, in the absence of pneumothorax, is notable.

The commonly accepted earliest signs of free pleural effusion are an obliteration of the costophrenic angle, some flattening of the dome of the diaphragm and some loss of detail at the base of the lung on the affected side. With only these signs, however, pleural adhesions cannot be excluded. Until the appearance of a moderately dense shadow at the base of the lung, usually higher on the lateral side, or extending along the periphery almost to the apex as a ribbon-like shadow, the diagnosis of pleural effusion is not at all certain.

Before any of these signs occur there must be, in most cases at least, a filling of the posterior, and frequently also of the anterior, pleural sinus which lies below the level of the dome of the diaphragm. Here the fluid first accumulates [2] and tends to remain when the patient is in the usual upright position. Both the hydrostatic pressure of the fluid and the retractile force of the lung tend to keep this first small effusion in the most inferior, posterior and outer angle of the pleural cavity. Even with the deepest inspiration and

* From the Department of Roentgenology of the University of Minnesota Medical School and the University Hospital.

* Read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Emerson, C. P., in Tice: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc. **5**: 598, 1924; Physical Diagnosis, Philadelphia, J. B. Lippincott Company, 1928.

2. Ganter, G.: Deutsches Arch. f. klin. Med. **141**: 68 (Nov.) 1923.

the most exacting roentgen technic, the shadow of this small amount of fluid may remain invisible. This is due, obviously, to the absence of contrast, the shadow of the fluid being superimposed on the dense shadows of the diaphragm and subdiaphragmatic structures. Only when the effusion rises sufficiently high in the

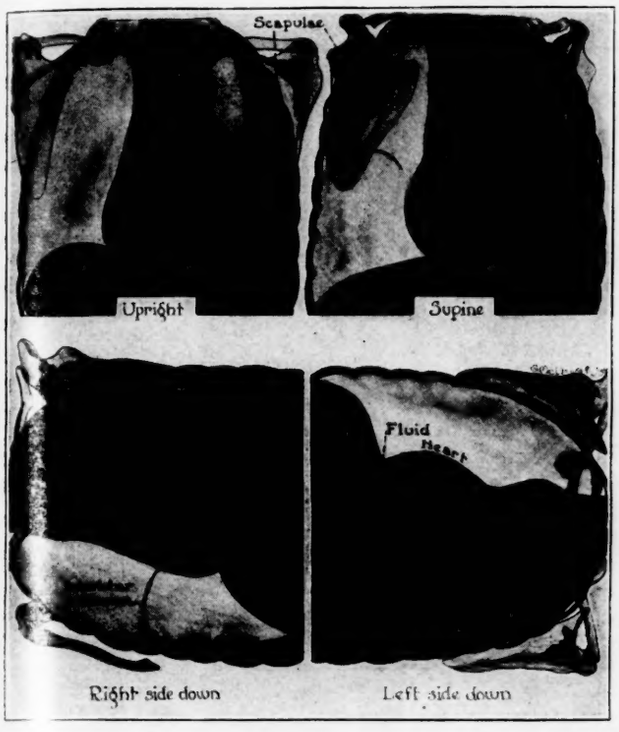


Fig. 2.—Drawings from tracings of roentgenograms, in various positions, from a case of pleural effusion secondary to Hodgkin's disease. The marked movement of the left sided effusion with change in position of the thorax and the absence of evidence of fluid on the right side in the upright, supine and left lateral decubitus position is noticeable. With the right side down, a shadow parellel to the right costal margin characteristic of fluid is shown. The appearance of an interlobar effusion in this view but absent in all others except the supine, in which the shadow suggests interlobar thickening, may also be noted.

thoracic cavity to give a shadow contrasting with that of the neighboring lung does it become clearly visible.

In the course of the development of the roentgen method, numerous positions have been used for the study of the thoracic viscera. In the usual position, the patient is upright with the film in front, the x-ray tube behind. The lateral view has also been used with considerable advantage and occasionally small effusions not obvious in the postero-anterior view may be seen in the lateral view. Nevertheless, even in this position, superimposition of the shadows of the contents of both thoracic cavities and of the abdominal cavity on each other leads to confusion and difficulty in diagnosis. Furthermore, if there is an effusion already present on one side it is virtually impossible to determine the presence of fluid on the other if the lateral position is used. Diagnosis both in postero-anterior and in lateral views is dependent on clear visualization of the lateral or posterior costophrenic angles. These can be seen well only when the diaphragm has moved downward with a deep inspiration, and this is obviously difficult to obtain in the presence of an inflammation of the pleura.

On the continent, especially where roentgenoscopy is the method of examination, eccentric positions of the x-ray tube with relation to the fluorescent screen have been used to obtain visualization of small effusions. If combined with careful rotation of the patient through various angles these efforts may be successful, but the method is difficult and the results are frequently indefinite. It would seem desirable, therefore, to use a position which would cause the fluid to gravitate from the inferior portion of the pleural cavity, which is below the dome of the diaphragm, into the lateral pleural cavity, where the shadow of the fluid would present a strong contrast to that of the air-filled lung alongside it.

The value of such a method would depend on whether or not fluid in the pleural cavity will move freely with change in position of the patient. A study of the literature on this subject reveals a most confusing lack of unanimity. Such authors as Cabot,[3] Emerson [1] and Bigler,[4] and many others, state with considerable definiteness that pleural effusions change very little in position. Lenk [5] quotes freely from the standard continental authorities on roentgen and physical diagnosis to indicate the sharp disagreement on this subject. The majority state that there is little or no shifting of pleural effusions with change in position of the thorax. His own conclusions, however, based on roentgenoscopic observations, indicate that pleural exudates as well as transudates move freely when the patient is moved from the upright to the prone position.

I undertook a similar study during which all the patients in whom there was evidence of pleural effusion in the usual upright or prone postero-anterior roentgenogram were also roentgenographed in a variety of positions; namely, upright, prone, supine, and lying on both sides. In the course of this study, which will be reported in detail later, the free movement of all pleural transudates and most of the pleural exudates was definitely established. Only those cases in which there is a large amount of fibrin or pleural adhesions or an exudate of the thick plastic type show no shifting. This movement of an effusion is well illustrated in a case of pleural transudate in the left pleural cavity of a child suffering from chronic nephrosis. The roentgenograms made in the upright and supine positions are shown in figure 1 and demonstrate well the change in position of the fluid. In the upright position (fig. 1 *A*) the fluid lies entirely at the base of the left lung and, in fact, simulates the shadow of a high diaphragm. In

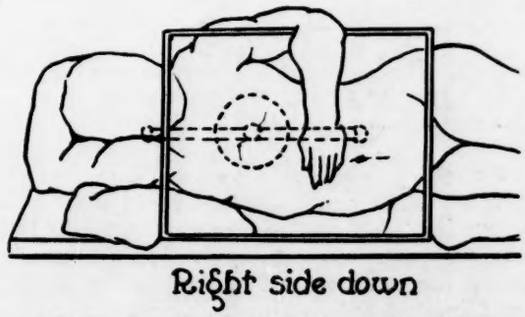


Fig. 3.—Diagram to show lateral decubitus position. The patient lies on the affected side with film in front and tube behind. The shoulders and hips are supported by cushions to permit the cassette to come down to the table top and thereby cover the inferior costal gutter with film. The upper arm extends over the cassette, helping to hold it in position.

the supine position (fig. 1 *B*) the fluid has spread out in a thin layer from the apex to the base although there was no pneumothorax present. Figure 2 is a diagram from tracings of roentgenograms in the upright, supine,

3. Cabot, R. C.: Physical Diagnosis, New York, William Wood & Co., 1927.
4. Bigler, J. A.: Interpretation of Roentgenograms of Chest in Children Based on Observations at Necropsy, Diseases of Lungs, of Pleura and of Mediastinum, Am. J. Dis. Child. **39**: 91 (Jan.) 1930.
5. Lenk, R.: Wien. Arch. f. inn. Med. **11**: 459 (Nov.) 1925.

right decubitus and left lateral decubitus positions, from a case of Hodgkin's disease with bilateral pleural effusion. The shift in the fluid shadow from upright to supine positions is also well shown in this case.

In order to produce the change in the position of the fluid from the pleural sinus below the dome of the diaphragm to the lateral portion of the pleural cavity, the lateral decubitus position is most advantageous. Figure 3 illustrates this view. The patient is lying on the involved side, the film being in front, the tube behind. One of the important features in the roentgenographic technic is also illustrated. In order to bring the film itself to the very outer margin of the chest wall on the inferior side, it is necessary to raise the patient above the level of the table by cushions under the shoulder and hip. In this way the cassette may drop an inch or two below the level of the patient's body and will rest on the table with the patient's upper arm around it giving support. Exposures are made on deep inspiration with the usual factors for chest technic.

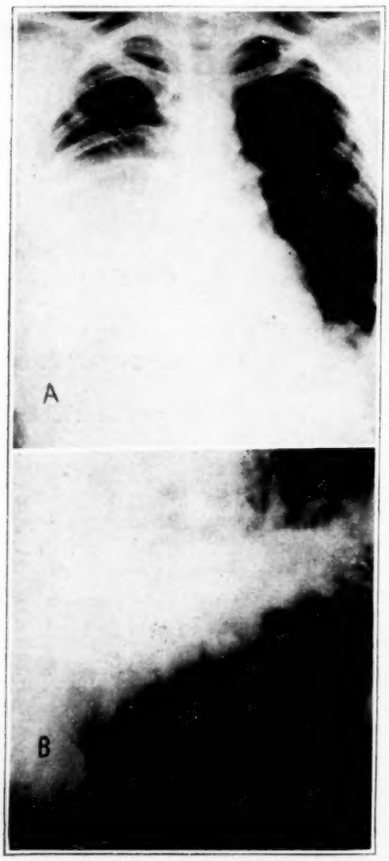


Fig. 4.—Appearance of fluid in a case of bilateral pleural effusion, probably tuberculous: *A*, upright position: The fluid on the right is obvious. On the left also a shadow of fluid is shown with some obliteration of the costophrenic angle but much less in amount than on the right. *B*, left side down: A large amount of clearly defined fluid is shown. The apparent increase in the amount shown is no doubt due to shifting of the fluid from the inferior pleural sinus to the lateral costal gutter.

In this position five patients have been observed in whom fluid could be readily detected when it was entirely invisible in the usual upright or reclining positions. In three other patients there was a shadow shown in the upright position which was suggestive but not entirely diagnostic of effusion, while in the lateral decubitus the evidence of fluid was unmistakable. Figure 2 illustrates these observations in diagram. The fluid on the left side was obvious but in the upright, supine and left side down positions the right costophrenic angle and the pleural eavity were entirely clear. The right diaphragm was not flattened. In the right lateral decubitus, however, there was unmistakable evidence of fluid as shown by the dense shadow in the inferior portion of the thoracic cavity with its upper surface parallel to the long axis of the chest. This is the characteristic appearance of fluid in this position. In this case it was confirmed by thoracentesis later when the fluid had increased in amount.

This case also illustrates another phenomenon which will be dealt with in more detail in a subsequent paper. Only a faint line is present in the upright film in the region of the right horizontal interlobar fissure, the appearance suggesting interlobar pleural thickening. In the right lateral decubitus, however, there is a dense triangular shadow resembling strongly an encapsulated interlobar effusion between the middle and the upper lobes. This is undoubtedly due to gravitation of the free pleural fluid into the interlobar fissure, possibly due to the capillarity exerted by this small space. It is evident that the patient must be in the proper position for this to occur. This phenomenon has been observed in seven cases including both pleural exudates and transudates. It is worth observing that this may be an explanation for the frequent occurrence of interlobar exudates which disappear readily without intervention. This may also be used as a differential factor between pleural thickening and fluid.

The increased visualization of pleural effusions which the lateral decubitus position affords is well illustrated in another case of bilateral pleural exudate, probably tuberculous in origin. The film, made in the upright position, is shown in figure 4 *A* and demonstrates a large amount of fluid on the right and a small amount in the costophrenic angle on the left. With the patient lying on the left side a postero-anterior roentgenogram (fig. 4 *B*) shows a large amount of fluid lying in the lateral costal gutter—surely much more obvious than in the upright film.

Another case in which this position was of considerable value is shown in figure 5. This patient was roentgenographed a few days after an attack of pain in the left side of the chest which was thought to be pleural in origin. In the upright position (fig. 5 *A*) a typical "tent" was shown on the left diaphragm but the costophrenic angle was clear and the diaphragm was not flattened. In the left lateral decubitus position (fig. 5 *B*) there was a definite shadow at the lateral costal margin extending from the diaphragm almost to the apex and having a depth of about 1 cm. Figure 6 is a drawing made from tracings of the roentgenograms. This case proved to be a tuberculous effusion and the presence of fluid was later confirmed by the increase in its amount.

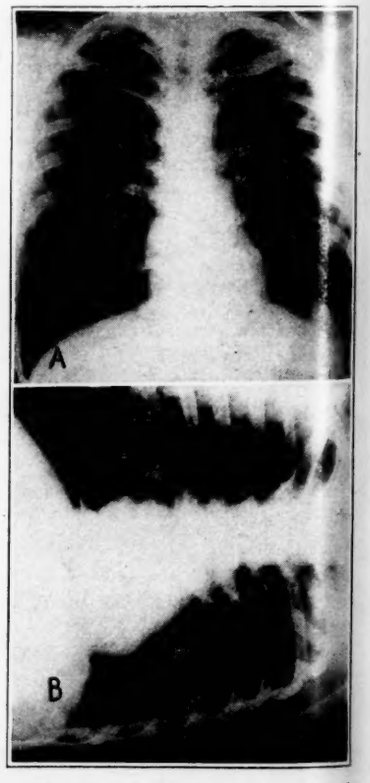


Fig. 5.—Appearance in a case of "pleurisy": *A*, upright position: The clear left costophrenic angle and pleural cavity and diaphragmatic adhesion may be noted. *B*, left side down: The shadow of fluid in the left pleural cavity is clearly shown, the shadow extending along the inferior costal margin and parallel to it.

The final case of this type, which is illustrated in figure 7, was one of cardiac failure with a moderate and obvious pleural effusion on the left shown in the prone position (fig. 7 *A*). On the right there was also seen

a shadow in the costophrenic angle, but it would be difficult to determine from this alone whether it was due to a small effusion or to pleural thickening. A film made with the patient lying on the right side (fig. 7 *B*) indicated the marked change in the shadow which occurred under these circumstances, demonstrating beyond a doubt the presence of fluid. The filling of the interlobar fissures in this position could also be seen and demonstrated again this phenomenon as a differential diagnostic factor between pleural fluid and thickening.

The differentiation of small effusions from pleural thickening is frequently very difficult both clinically and roentgenologically. As the foregoing case illustrates, the change in position of the fluid as shown by the filling of the lateral costal gutter or the interlobar spaces will frequently aid in ruling out pleural thickening. The converse is also true, as is illustrated in figure 8.

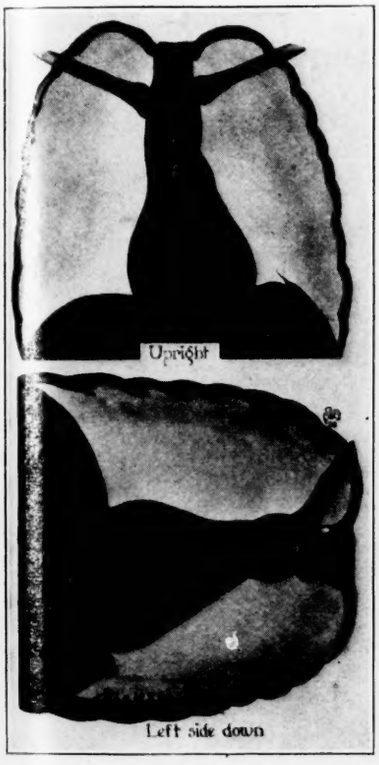


Fig. 6.—Drawing from roentgenograms shown in figure 5, illustrating observations described there.

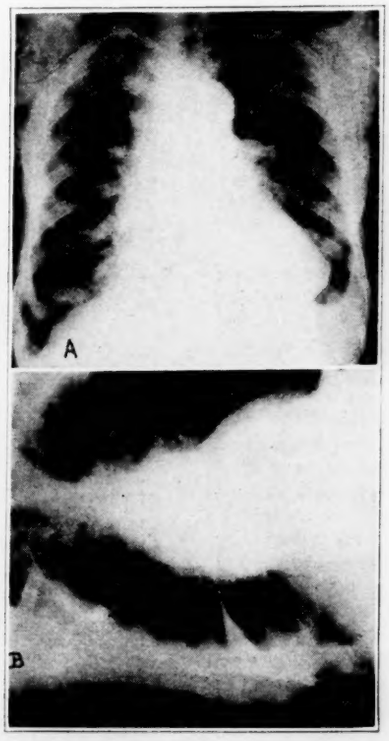


Fig. 7.—Appearance of fluid in a case of bilateral pleural effusion secondary to myocardial failure: *A*, prone position: The fluid on the left is obvious. On the right there is only a slight shadow along the periphery resembling thickened pleura. A faint shadow of the interlobar fissures is also shown. *B*, right side down: The fluid on the right is now very obvious and extends along the lateral costal gutter. The filling of the interlobar fissures may be noted.

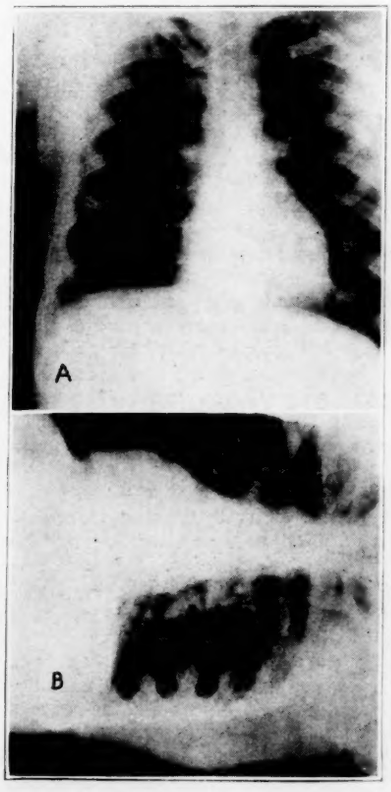


Fig. 8.—Appearance in a case of pleural thickening: *A*, upright position: Obliteration of right costophrenic angle with marked density of peripheral pleura on the right. A small effusion might simulate this. *B*, right side down: There is no change in the shadow, ruling out fluid.

This is from a case of tuberculous pleurisy in which an extensive effusion on the right had been present and had spontaneously absorbed. The roentgenograms were made long after clinical evidences of effusion had disappeared. In the usual upright position, the film (fig. 8 *A*) shows a narrow dense shadow obliterating the costophrenic angle and extending up along the periphery of the lung field. It is quite characteristic of pleural thickening but might simulate a small effusion. In the right lateral decubitus position (fig. 8 *B*) the conditions are almost identical, indicating the striking difference that is present between pleural thickening and effusion when a change in the patient's position takes place.

Many other cases have been observed which confirm and elaborate these observations. In view of the fact that practically all small effusions are likely to be observed before adhesions have formed, it is probable that the small effusion always changes its position with movement of the patient. Roentgenograms in the lateral decubitus position, therefore, will no doubt enable the earliest possible diagnosis of small effusions to be made. They will also serve to differentiate with greater accuracy between small effusions and pleural thickening.

It should be noted that roentgenoscopic examination, with the patient in this position, will give the same results. In order to make such an examination, a specially built table, such as that of Carelli or any of those which were devised for pneumoperitoneum, should be used. Otherwise, the patient can be placed on a table in front of the upright roentgenoscope and thus observed. The roentgenographic method is no doubt more exact, but the roentgenoscope in skilled hands can be relied on in this, as well as in the usual position, for the diagnosis of pleural effusion.

Although the literature contains many references to the free movement of pleural effusions, only two articles can be found that concern themselves with the use of this position. Merlo Gomez and Heidenreich,[6] in 1924, described a similar position for the early diagnosis of pleural effusions. Their paper was not illustrated but their description of the roentgen observations in this position tallies so exactly with those which I have obtained that it serves to make more certain the utility

6. Merlo Gomez, J. F., and Heidenreich, A. J.: Rev. Asoc. méd. Argent. **37**: 135 (Aug.) 1924.

of this procedure. Polgar [7] also described a similar method.

SUMMARY AND CONCLUSIONS

Pleural effusions, unless adhesions are present, move freely with change in position of the thorax.

In a new position for roentgen examination of pleural effusions, presented here, the patient lies on the affected side, the film being in front, the x-ray tube behind.

Small effusions, which are entirely invisible in the usual positions, may be readily detected in this lateral decubitus position. Pleural thickening may be distinguished from a small pleural effusion by the use of this position.

With change in position of the thorax, a free pleural effusion may extend into the interlobar fissures, giving the appearance of an encapsulated interlobar effusion. This phenomenon may also be used to differentiate fluid from pleural thickening.

ABSTRACT OF DISCUSSION

DR. LEROY SANTE, St. Louis: Some roentgenologists have felt that, while pleural effusions did possibly change their positions in the chest, they did not create a sufficient difference in appearance in the prone and erect positions to be of diagnostic value. Dr. Rigler's presentation has removed this false impression and has added a valuable procedure for the detection of small pleural effusion. The principal importance of his work is the roentgenographing of the patient with the affected side down. This allows a small collection of fluid previously hidden in the posterior culdesac to run up along the lateral chest wall where the lung offers the least resistance. While most roentgenologists have used this position occasionally in special cases to determine the extent of the pathologic changes in the chest, few have used it as a general diagnostic procedure because of its natural cumbersomeness. I recall one instance clearly of a young child in whom I could find no roentgenographic evidence of pleural effusion. The clinician, however, on exploratory puncture withdrew a small amount of purulent material. I was at first so firmly convinced that it did not come from the pleural cavity that I was suspicious of a subphrenic collection of pus. It is possible that this might have been detected by Dr. Rigler's position. Opportunity was afforded me a few weeks ago to review Dr. Rigler's paper. In an effort to verify his finding in the laboratory I examined twenty-five or thirty patients with pleural effusion. Every patient who came in, suspected of pleural effusion, was examined in all positions regardless of my ability to determine whether adhesions were present or not. One after the other they showed either no change or relatively so little difference in the roentgenographic appearance as to be of little diagnostic value. Toward the end of the series, however, a few cases were seen in which there was material change in the roentgenographic appearance. The one that shows the most marked change in appearance on roentgenographing in various positions I brought along for demonstration. There can be no doubt, at least in my mind, that Dr. Rigler's work has demonstrated the movability of effusions in the chest under certain conditions. Wessler and Jaches have contended that pleural effusions move in the chest but did not, as far as I know, demonstrate the efficaciousness of Dr. Rigler's position.

DR. LEON T. LE WALD, New York: Will Dr. Rigler say a word in regard to how he supports the patients in the lateral position to get good details on the edge of the chest?

DR. LEO G. RIGLER, Minneapolis: I will answer Dr. Le Wald first, because it involves a simple procedure. A good table has not been worked out. I think if one had a Carrelli table or one of those used for work on pneumoperitoneum, it would work out easily. All I have done is to support the hips and shoulders of the patient with a pillow. That raises him enough above the table so that the casette can drop down to the table top and in that position it is easy for him to put his arm over the casette and support it against himself. If he is unable to support it, it is easy enough to support the casette with sand bags pushed up against it. The tube, of course, is behind. It has worked out without difficulty, except in patients who are extremely ill, in whom almost any other type of procedure is difficult to undertake.

DR. LE WALD: How long do you wait?

DR. RIGLER: It has taken me probably five minutes to get the patient in the position and it is changed in that period of time. In the cases in which I was unable to find any movement in the position of the effusion, I waited several hours, and it didn't make any difference. Lenk, in 1924, reported fluoroscopic observations in a series of seventeen cases, all of which were inflammatory and in all but two of which he found, by changing the patient from the upright to the supine position, a distinct change in the position of the effusion. In large effusions, obviously, there will not be much shifting, because when the lung is collapsed down and the effusion is filling most of the pleural cavity there is comparatively little room for any shift to take place. It seems reasonable that small effusions would occur before there is opportunity for adhesions to have formed, so that most of those will more freely out of this inferior costophrenic sinus into the pleural cavity.

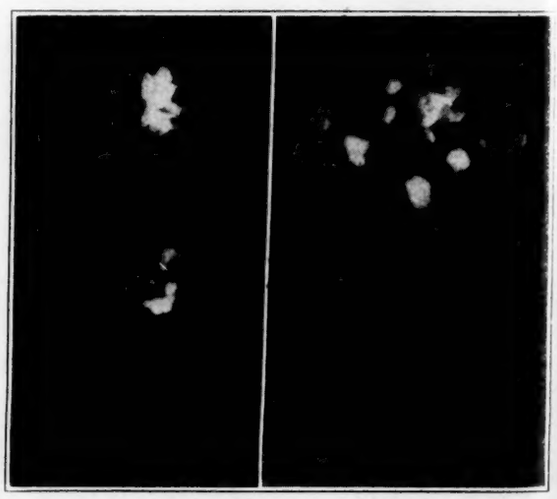
7. Polgar, F.: Fortschr. a. d. Geb. d. Röntgenstrahlen **35**: 618, 1926.

Clinical Notes, Suggestions and New Instruments

GALLSTONES IN INFANCY

A. A. SKEMP, M.D., LA CROSSE, WIS.

Gallstones have been found in new-born infants and in very young children, but the finding is such a rarity that it merits reporting whenever it does occur.



At left, gallbladder; at right, stones.

Early in July, a child, aged 17 months, took sick with convulsions and died about six hours after the onset of the convulsions. A possible etiology was suggested by the mother in relating the child's activities during the day before death, when it was seen to be eating various plants and wild berries that grew in the vicinity of the house. Permission for a postmortem was obtained and an extensive pneumonic process, involving the lower part of the left lung was found. The abdomen was normal except that the gallbladder was slightly distended and contained stones. The gallbladder was carefully removed and sent to the Pathological Department of the University of Wisconsin, where it has been preserved as specimen 450. There were numerous stones, the largest from about 5 to 10 mm. in diameter. The gallbladder wall was not thickened.

Prior to its death, the child had had no digestive disturbances and had all the appearances of a healthy and vigorous child. It had been breast-fed and from the time of its weaning until its death there was nothing unusual in the dietary.

The accompanying illustration is reproduced from photographs made by Dr. P. F. Green of the Pathology Department of the Wisconsin General Hospital.

CHRONIC THROMBOCYTOPENIC PURPURA HEMORRHAGICA CURED BY SPLENECTOMY

ROSS PROCTOR, M.D., LANCASTER, PA.

Since Kaznelson, in 1916, performed the first splenectomy for purpura hemorrhagica there have been only 160 cases reported in the literature. It seems worth while to add another report to the series, especially as the duration of symptoms in this case is one of the longest on record.

The results of splenectomy have been brilliant in cases of purpura that are clear cut. Fortunately, all the cardinal signs were present: thrombocytopenia (highest count 10,000 after transfusion, usually none found); prolonged bleeding time (average, twenty minutes); nonretractile clot (none in twenty-four hours); positive capillary resistance test (showers of petechiae on the dependent parts even on merely standing), and a tendency to bleed from the mucous surfaces. It is interesting to note the rapid regeneration of blood when the acute hemorrhage was controlled. The dramatic change in the blood picture immediately after operation is noteworthy. The cessation of bleeding on clamping the pedicle, as noted by some,[1] was not apparent in this case.

While it is desirable to operate early, a late operation does not militate against a good result, as suggested by Washburn.[2]

REPORT OF CASE

History.—A white woman, aged 40, married, admitted to the hospital, Dec. 9, 1929, dated her present illness back twenty-five years to puberty, when excessive bleeding with menstruation was noticed. Associated with this was a tendency to severe nosebleed and a proneness to bruise easily. On one occasion twenty-three years before, following extraction of a tooth, she lost enough blood to cause her to faint. This tendency to bleed had become progressively more marked during the years. Apparently the resultant anemia had kept her a semiinvalid. Seven years before admission, following the extraction of teeth, she lost enough blood to become pulseless for twenty-four hours. With the birth of her children, bleeding was severe but in only two of the six pregnancies was it alarming. Six months previous to admission she had had an unusually profuse menstrual period. The bleeding never quite stopped, becoming worse six weeks before admission and progressing steadily until she was brought in unconscious, pulseless and exsanguinated, apparently moribund.

The family and previous histories are without interest.

Examination.—The patient, who appeared frail, was still bleeding actively from the vagina. There were numerous petechiae over the arms, body and legs. At intervals of from one to three minutes, spasmodic contractions of the face and arms appeared, much like those of epilepsy. The examination otherwise was negative. The spleen was not palpable. The temperature was 97 F. on admission, dropping to 95 in an hour, then rising rapidly to 103. The pulse was 125 and very feeble; respiration, 38. The hemoglobin was 10 per cent on admission; red blood cells, 1,000,000; white blood cells, 12,600. The platelets were not counted. The accompanying chart gives the record of the blood examinations while the patient was in the hospital.

Course.—A large (1,050 cc.) transfusion was given at once by the direct method. Following this the patient's pulse and color improved markedly. The convulsions continued a few hours and the coma lightened gradually, lasting eight hours in all. Fifteen hours later she was remarkably improved, being able to sit up and eat breakfast with a good appetite. The vaginal bleeding had practically ceased. The temperature ranged from 99 to 103 F. irregularly for six days and then became normal. The pulse varied from 90 to 120 for the first week and then became constant below 90. The respirations were from 38 to 40 for the first and second days and then dropped and remained at 20.

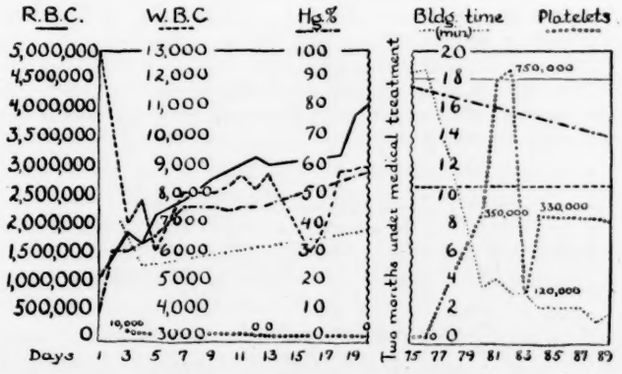
By the sixth day she felt quite well. Another transfusion of 585 cc. was given to increase the count, and radium was applied to prevent a return of menstruation.

Progress from this time on was smooth and rapid. The blood picture had returned practically to normal at the end of three weeks.

As long as she was kept in bed all was well, but on attempting to stand a shower of purpuric spots would appear and vaginal oozing recommence. She therefore was kept in bed for another month until arrangements for transfusion and operation could be made.

Operation.—Transfusion of 500 cc. was given by the direct method, followed immediately by operation under gas-oxygen and ether. A long left rectus incision was made. The spleen was free except for a few slight adhesions on the posterior surface, which were easily separated by the fingers. It was engorged but only slightly enlarged. The vessels appeared extremely delicate, so no attempt was made to deliver the organ, but it was exposed by packing. The vessels were exposed, separated, and each ligated doubly with silk. The wound was closed in layers without drainage except to the subcutaneous fat, to take care of the oozing, which had been excessive but not alarming all along. All oozing ceased within a few hours after operation.

Postoperative Course.—This was smooth and uneventful. The temperature rose to 102 F.[3] the first day following operation, returning to normal the second day and remaining so. The pulse was somewhat rapid, reaching 150 the first day and then gradually dropping to 90 on the fourth day and remaining at 90 or below thereafter. The wound healed by first intention.



Results of blood examination.

Pathologic Examination.—The specimen consisted of a markedly congested spleen measuring 10 by 8 by 4.5 cm. and weighing 130 Gm. The spleen was soft, dark red and markedly congested. Its capsule was torn in three places from the detachment of adhesions. The capsule was dotted over with numerous small, opaque, white nodules. The spleen had been detached at the hilus. The splenic vessels were small and friable. No accessory spleens or pancreatic material were included with the specimen.

Microscopic examination of the spleen showed the presence of chronic congestion. The blood sinuses were crowded with erythrocytes, and deposits of hemosiderin were found throughout the spleen. A fine general fibrosis of the splenic pulp was seen, but no increase in the thickness of the capsule or of its trabeculae. The spleen was rich in lymphocytes. The reticuloendothelial system was poorly developed and in a resting state. Lymph follicles were present in the spleen but were not overabundant. The sheathed arterioles were abundantly surrounded by lymphocytes, and these cells were present in great numbers but not in overabundance throughout the spleen.

Microscopic examination of the splenic arteries showed them to be of small caliber and thin walled. The intima and muscular layer of the media were well developed but fibrous, and elastic tissue and adventitia were almost lacking.

The pathologic diagnosis was: spleen of chronic thrombopenic purpura hemorrhagica.

It might be added that, microscopically, portions of pancreatic structure were discernible among the vessels of the

1. Brill, N. E., and Rosenthal, Nathan: The Treatment by Splenectomy of Essential Thrombocytopenia (Purpura Hemorrhagica), Arch. Int. Med. **32**: 939-953 (Dec.) 1923. Killins, W. A.: Acute Thrombocytopenic Purpura Cured by Splenectomy, J. A. M. A. **92**: 1832-1833 (June 1) 1929.

2. Washburn, A. H.: Splenectomy in Thrombopenic Purpura: Report of Three Cases, J. A. M. A. **94**: 313 (Feb. 1) 1930.

3. Beer, Edwin: Transactions of the New York Surgical Society, Ann. Surg. **91**: 603 (April) 1930.

hilus, in spite of the method of ligating and dividing each vessel separately. Some disturbance of the tail of the pancreas is not always avoidable. It is interesting to note that there was no temperature reaction to an injury of the tail of the pancreas, such as is ascribed by some,[4] in explaining the frequent pyrexia after splenectomy.

Follow-Up.—July 18, 1930, five months after operation, her general condition was good. She was working and gaining weight. There had been no bleeding since operation. She had some "rheumatism" in her feet; otherwise she was well.

The red blood count was 4,500,000; hemoglobin, 80 per cent; platelets, 120,000, and the bleeding time, four minutes.

A tourniquet test showed a few scattered petechiae after ten minutes' application. No spontaneous petechiae were seen. The patient did not now bruise readily.

COMMENT

It is interesting to note the comparatively slight change in the spleen though the disease was of long duration (twenty-five years) and in a case in which the spleen was obviously the main factor, one of the group two cases of Spence.[5]

The patient was in coma more than eight hours, with a hemoglobin of less than 10 per cent and a red blood count of 1 million or less. There was evidence of definite cerebral and medullary damage; namely, coma, convulsions and rising temperature. Recovery was complete following transfusion except for the possibility that the "rheumatism" is the result of anemic necrosis of the cord.

The prompt regeneration of the blood is important as an indicator of prognosis. One may presume this to mean that the disease process is localized to the spleen and the bone marrow is relatively unaffected.

The late drop in platelets to below normal (120,000 after five months) without a return of clinical symptoms agrees with the majority of reports.

323 West King Street.

BRONCHIAL ASTHMA CAUSED BY LIVER AND LIVER EXTRACT DIET IN A PATIENT SUFFERING FROM PRIMARY ANEMIA

EDWARD MATZGER, M.D., SAN FRANCISCO

W. A. M., a white man, aged 36, referred by Dr. H. W. Davis, Sept. 11, 1929, complained chiefly of severe bronchial asthma. His family history was negative for all allergic diseases. As a child, he had measles, mumps, whooping cough and recurring attacks of bronchitis, croupy in character. A tonsillectomy was performed in 1913, followed by severe hemorrhage twenty-four hours later. He was treated with horse serum without reaction. In 1914 the patient began having recurring attacks of bronchial asthma of from two to three days' duration, at intervals of from four to six weeks. Attacks became progressively worse, more frequent and of longer duration.

In the fall of 1920 the patient moved to the country and the asthma was greatly improved. Attacks recurred only once a month. In 1928 he returned to the city; the asthma remained unchanged. He went to Dr. Henry Abrahm with the chief complaint of leg pains, headaches and weakness. A diagnosis of primary anemia was established. Blood count, Feb. 17, 1929, revealed: hemoglobin, 49 per cent; red blood cells, 1,850,000; white blood cells, 9,100; neutrophils, 51 per cent; eosinophils, 2 per cent; basophils, 1 per cent; lymphocytes, 26 per cent; large mononuclears and transitionals, 20 per cent; normoblasts, 1 per cent, and megaloblasts, 1 per cent. The color index was 1.3. The patient was put on a diet of raw liver. The anemia responded after two weeks, but after one week of the liver diet the bronchial asthma became constant and persisted until the liver was discontinued. A satisfactory blood picture was maintained without treatment, as evidenced by the blood count of June 1, 1929: hemoglobin, 90 per cent, red blood cells, 4,190,000; white blood cells, 8,600; neutrophils, 38 per cent; eosinophils, 3 per cent; basophils, 1 per cent; lymphocytes, 53 per cent; large mononuclears and transitionals, 5 per cent; color index, 1 plus.

Bronchial asthma recurred in the fall of 1929 with increasing severity. Under specific immunization with fall pollens and house dust, the patient improved. Under observation he was given raw liver, which was followed after three days with exacerbation of the asthmatic symptoms, which were relieved promptly when liver was discontinued.

Desiccated hog stomach maintained the blood picture without causing asthma. Because of the leg pains the patient, of his own free will, took liver extract. After three days an acute exacerbation occurred, which again subsided on the discontinuance of the liver.

A physical examination revealed the characteristic lemon yellow color. The heart and lungs were normal. The tidal air was 700 cc.; the vital capacity, 2,100. Gastro-analysis revealed no free hydrochloric acid. It was negative after 0.025 Gm. of histamine. Skin tests revealed a sensitiveness to house dust, timothy, rye (*Lolium multiflorum*), goat dander, sheep's wool, artichoke, brussels sprouts, cabbage, cauliflower, onion, parsley, spinach, turnip, liver, watermelon and chocolate.

The patient was actively immunized to *Lolium multiflorum* and house dust and is now free from asthma and hay-fever.

COMMENT

My purpose in this report is to call attention to the fact that liver may be asthmogenic. Since liver and liver extract can be causes of bronchial asthma, it must be borne in mind that they may cause other allergic manifestations, such as gastro-intestinal upset and skin eruptions.

909 Hyde Street.

4. Beer: Ann. Surg. **91**: 603 (April) 1930. Connors: Ibid.
5. Spence, A. W.: The Results of Splenectomy for Purpura Hemorrhagica, Brit. J. Surg. **15**: 466-499 (Jan.) 1928.

A CONVENIENT ABDUCTION SPICA FOR PROLONGED IMMOBILIZATION OF THE HIP JOINT

WALTER I. GALLAND, M.D., NEW YORK

The oft repeated aphorism that "we enter life through the brim of the pelvis, and leave it through the neck of the femur" is one that even today carries much ominous truth. The treatment of fracture of the neck of the femur in recent years by means of the Whitman spica has favorably altered the prognosis of this injury. However, the application of a full spica, extending from the ribs to the toes in an elderly patient, is an expedient often fraught with serious consequences. On account of the dorsal decubitus which the spica necessitates, plus the undue confinement of the costal cage, with consequent diminution of the respiratory excursion, the patient is exposed to the great danger of hypostatic pneumonia. Many patients who are treated for fracture of the neck of the femur in the classic spica succumb not to the fracture but to hypostasis in the pulmonary circulation.

Another consequence of the long inclusion in such a spica, less serious than that mentioned, but nevertheless extremely disagreeable, is due to the stiffness of the knee, which results from the long immobilization of that joint. Sometimes this resolves itself into an intractable extension contracture which at times baffles the ingenuity of the physician to rectify. This contracture is essentially due to a shortening of the quadriceps, which becomes fixed by virtue of the long immobilization in complete extension. In elderly persons, whose tissues lack resilience, this complication is almost certain to occur.

It has been my custom for a number of years to use the form of long spica that will be described herein. This spica was designed to lessen to some extent the defects just enumerated.

With the extremity in the abducted, internally-rotated position, and with the bony prominences properly padded, a long plaster spica is applied from the lower margins of the axillae to the toes. After the plaster is firmly set, it is trimmed very low on the side of the chest corresponding to the injured extremity. This frees one lateral half of the thorax and permits unrestricted respiratory motions. On the opposite side, the plaster rises high into the axillary region and prevents by lever action against the thoracic wall the adduction of the thigh which is included in the spica. It will be seen by an inspection of the drawing that any attempt to adduct the thigh in the spica will immediately cause pressure against the opposite ribs, and

adduction will thus be impeded. It is admitted that some degree of adduction can occur, if the patient bends his body away from the high side of the spica. In my experience, this slight loss of abduction, if it occurs, is never enough to affect significantly the position of the fragments.

In a similar manner, the unfavorable sequelae of prolonged immobilization of the knee are overcome by cutting an extensive window in the spica, beginning at a point on the anterior aspect of the thigh, about a hand-breadth above the patella, and extending down over the anterior aspect of the lower third of the thigh, leg and dorsum of the foot. Through this window, gentle massage can be administered to the knee and to the muscles of the leg. The patient is instructed to perform what I term the patellar dance by contracting and relaxing the quadriceps muscle, thus making the patella move up and down on the relatively immobile knee. The subcrureus muscle, which partakes in the quadriceps contractions, is attached to the capsule of the knee joint, and the active exercise of it, by means of this expedient, contributes much toward maintaining a supple condition of the articular and periarticular structures of the joint. The lateral and medial aspects of the foot remain

The modified Whitman spica. The freedom of the ribs on the abducted side, also the window permitting patellar exercise and massage of the muscles of the leg, may be noted.

encased in plaster, and external rotation is thereby prevented. Thus it is possible to maintain the necessary internal rotation of the extremity and, at the same time, to provide for a certain amount of exercise and motion to the structures of the knee and ankle.

Later in the course of treatment, it is well to supplement this measure for preserving motion at the knee by inserting hinges in the spica at this joint. Thus a wide range of motion of the knee is permitted without disturbing the rotational position of the extremity. The hinges are of simple steel construction with roughened bars, which are included in the plaster bandage. In fractures of the neck of the femur, these hinges can be inserted after the sixth or seventh week. In inserting them, care must be taken to preserve the internal rotation of the extremity.

It is self-evident that the same technic may be applied in cases other than fractures of the neck of the femur, in which the long spica is necessary.

The procedures outlined, although relatively simple, add much to the comfort and safety of the patient, and produce results which are less apt to be compromised by undesirable complications.

1085 Park Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS APPROVED THE FOLLOWING ARTICLE.

H. A. CARTER, Secretary.

THERAPY WITH LONG WAVELENGTH X-RAYS (GRENZ RAYS)

FRANCIS CARTER WOOD, M.D.
AND
GEORGE M. MacKEE, M.D.
NEW YORK

It has long been known that the commercial x-ray tube emits practically no x-rays when run at a voltage of 10 kilovolts or less. The reason for this is that the glass of which the tubes are made has a high absorptive power for the long wavelength x-rays. If 10 kilovolts is taken as the limiting value for the voltage, the shortest wavelength of the x-rays which are excited is given by the well known Duane formula, which is: The shortest wavelength in angstrom units equals 12.35 divided by the peak voltage in kilovolts. This value is obviously 1.235 angstroms. Longer wavelengths than this are retained by the glass.

Many years ago, Lindemann showed that if a lithium borate glass was used, and the thickness kept low, x-rays of considerably longer wavelength would escape from the tube than with ordinary glass. As the lithium glass is difficult to handle, it is usual to make the tube of ordinary glass and insert a small window of lithium glass opposite the anticathode, though Bucky has designed a tube wholly composed of lithium borate glass. The construction of such tubes does not vary in principle from that of ordinary tubes. The anticathode is made of tungsten or an iron-chromium alloy and the electron stream is derived from a hot cathode as in the usual Coolidge construction. Water cooling of the anticathode is usual, as it greatly increases the tube output. Under these circumstances, radiation from 1 to 3 angstroms appears in quantity outside the x-ray tube, though probably at least 50 per cent is absorbed even in the lithium glass window. The lithium glass is not absolutely essential. If the wall of the tube is kept thin enough, such long wavelength x-rays as mentioned will penetrate in large quantities, but tubes with thin glass windows are difficult to handle from the mechanical aspect. X-rays of the longer wavelengths are rapidly absorbed in the air. Of those of 2 angstroms, 20 per cent is absorbed in a 10 cm. thickness of air, the corresponding absorption for 3 angstroms being 40 per cent. It is necessary, therefore, in practice, to make accurate measurements of the skin-focus distance, and it may even be advisable to filter the radiation with very thin aluminum foil, properly supported, in order to get a little more homogeneous radiation. It is obvious that if 20 per cent of the shorter wavelengths is absorbed in 10 cm. of air, the absorption in the skin will be much higher. As a matter of fact, the radiation of 3 angstrom units loses half its value in penetrating at a maximum 0.2 mm. of the skin, while that of 2 angstrom units loses half its value at approximately 1 mm. below the skin surface. This does not mean that a certain amount of the shorter wavelengths will not have a considerable range, and this is shown by the fact that it is possible to take excellent pictures of the bones of the hand with such radiation. Also the grain structure of a piece of pine wood 2.5 cm. thick is well brought out by a short exposure with such a tube,

giving much more detail than is ordinarily obtained with higher voltages.

The clinical measurement of these long rays can be carried out either by the use of the Sabouraud pastille, with the inaccuracies incident in such determinations, or by a specially constructed ionization chamber of the thimble type. The chief point is that the walls of the chamber be thin enough so that the radiation is not largely absorbed before it reaches the air of the chamber. In well equipped laboratories the measurements can be made, of course, with an open ionization chamber such as is used as a standard in determining the roentgen unit.

BIOLOGIC EFFECTS

As the action of these supersoft, infraroentgen, or grenz rays, as Bucky has called them, is wholly atomic, despite their long wavelengths, it would be expected that they would follow the quantitative laws already established for the biologic action of radiation by Wood and Packard. In fact, Packard has recently shown with the eggs of *Drosophila* that the biologic action of the soft x-rays of the type under consideration is the same as x-rays of short wavelength or gamma rays of radium, the lethal curves superimposing exactly. Clinically, however, the biologic effect may be expected to be somewhat different from that of shorter wavelengths, owing to the fact that the absorption takes place largely in the first few millimeters of the skin. Consonant with this fact, the histologic changes produced have been described as slightly different from those following radiation of the shorter wavelengths, the lesions being somewhat less marked in the vessels and characterized chiefly by proliferation of the connective tissue and certain changes in the stratum granulosum of the epidermis. But it is doubtful whether there exists any fundamental difference between the reactions following the application of any wavelength of x-rays to the skin.

APPARATUS

The exciting apparatus may be a step-down transformer, the current for which is obtained from a modern interrupterless x-ray transformer; or, as is usually the case, a special transformer, designed to supply a maximum of 10 kilovolts and 10 milliamperes, is employed. The principle of such a transformer does not differ from that of generators used for short-wave x-rays. It is simply a high-tension transformer with a closed iron core. The high-tension transformer is regulated by both autotransformer and resistance control. One of the high-tension lines is grounded. There is a small step-down transformer to supply suitable current for the Coolidge filament. A kilovoltmeter and milliamperemeter are built into the switch board. The apparatus has not yet been standardized. Some machines include a thermionic rectifier (kenotron tube) while others deliver an unrectified current. The transformer, with its accessories, is housed in a small cabinet on which is mounted the switch board, controls, tube stand and the water-cooling device for the tube. The apparatus is designed for use with commercial alternating current. If only direct current is available, a small rotary converter may be installed in the cabinet

TUBE

The special tube that is most popular for the purpose is a small, water-cooled, unipolar, hot-cathode glass tube which, with the exception of the Lindemann glass window, is encased in a metal housing. The tube is delicate; its life is likely to be short. It is important not to touch the Lindemann glass window.

Bucky and Glasser estimate the wavelengths obtained with this special tube and apparatus operating on about 8 kilovolts as ranging from 1.6 to 2.06 angstrom units. The average is about 2 angstrom units. Ultraviolet rays have wavelengths between 4,000 and 15 angstrom units. X-ray wavelengths range from about 15 angstroms to about 0.06 angstrom. X-ray wavelengths commonly used in radiotherapy are between 0.3 and 0.06 angstrom units. The grenz rays therefore fall well within the x-ray spectrum, but their average length is greater than that previously used for therapeutic purposes. Bucky estimates the longest x-ray wavelengths heretofore employed therapeutically at about 1 angstrom average.

CUTANEOUS REACTIONS

Because of the knowledge of the biologic action of x-rays of various wavelengths, radium and ultraviolet rays, and particularly the beta rays of low velocity, cathode rays and very soft secondary rays from heavy metals, the biologic effect of grenz rays is exactly what would be expected. Depending on the size of the dose, cutaneous reactions vary from simple erythema (redness) to vesiculation and erosion with exudation and crusting. Because most of the radiation (assuming that it has an average wavelength of 2 angstrom units) is absorbed by the epidermis and upper layers of the derma (depending considerably on the thickness of the skin, which varies markedly with location and disease), the deep derma and subcutaneous tissues are not likely to be seriously damaged with amounts recommended for therapeutic purposes. Therefore, no deep, indolent, painful ulcers that are so characteristic of third degree roentgen and radium ulcers have yet been reported. While delayed reactions occur, it is customary for the erythema to appear within twenty-four hours. Regardless of the intensity of the reaction, inflammation usually disappears in a few weeks: deep pigmentation, however, often endures for many months. Several times the erythema dose may be given at one sitting without effecting epilation, although if the dose is sufficiently large, epilation occurs. Four and even six times the erythema dose of short wavelength x-rays has been administered to small areas without provoking more than a mild second degree reaction. A larger amount is apt to cause a serious third-degree reaction. The grenz ray erythema dose has been increased considerably more than this without effecting more than an intense erythema, superficial edema and pigmentation with, at times, vesiculation, erosion, exudation and crusting.

Sequelae thus far have been uncommon. A few cases of mild atrophy and telangiectasia have been reported. Sufficient time has not yet elapsed, and too few patients have been treated, to estimate accurately the possibility of sequelae or to determine the possible danger of small and large doses repeated over a considerable period. However, it can be said that grenz ray therapy is much safer than therapy with shorter wavelengths, for both deep and superficial tissues. This is especially true for unskilled operators: either method is safe when properly employed. The safety factor in grenz ray therapy depends principally on using a tension below 10 kilovolts, preferably about 7 or 8 kilovolts.

TECHNIC

As with short wavelength x-rays, grenz ray dosage may be estimated by the direct method (photographic and pastille radiometers; spectrometer; electrostatic voltmeter; iontoquantimeter; biologically with seeds or larvae); or by the indirect method (milliamperage, volt-

age, time and distance); or by a combination of the two. Although being improved and simplified rapidly, it will be some time before iontoquantimeters and spectrometers are practicable for the daily routine use of the busy practicing physician; therefore the direct method is not popular in this country either for grenz rays or for shorter wavelength x-rays. In the near future the combined method is likely to be the choice, but possibly not until there is a larger number of capable physicists. For the combined method it is customary to have a physicist standardize a given apparatus and tube in terms of peak voltage, wavelength, roentgen units and erythema dose; in other words, quantity and quality expressed in milliamperage, voltage, time and distance. An amount over 200 or 300 roentgen units (half absorption value 0.036 mm. of aluminum) is likely to cause mild erythema. The quantity required for the erythema dose varies considerably with different authors because there is no definite clinical, biologic or instrumental standard for the erythema dose. Some place it as low as 200 r; others as high as 500 r or even higher. The technic should be checked frequently in the manner mentioned; also every time a new tube is used, an old tube repaired, or when any change is made in the installation. For daily use the operator depends on the four established constants; namely, milliamperage, voltage, time and distance.

Most operators in this country utilize the indirect method of estimating x-ray dosage regardless of wavelength; grenz rays are included in this statement. They establish the four constants (milliamperage, voltage, time and distance) for the erythema dose. The voltmeter is first calibrated for peak voltage by means either of a sharp-pointed or of a small sphere spark gap, preferably the latter. This is done by the manufacturer and should be checked occasionally. Eight kilovolts, with 8 milliamperes, will give an average wavelength of approximately 2 angstrom units (half absorption value 0.036 mm. of aluminum). The working distance is 6 centimeters. The time factor is obtained by applying the radiation produced by the constants mentioned to small areas of skin on some fairly sensitive part such as the flexor surface of the forearm of a young adult, in increasing amounts until erythema is evoked. The time is then recorded and added to the other constants. This is called (arbitrarily) the skin unit. Most operators in this country employ the following constants for the erythema dose: 8 milliamperes; 8 kilovolts; 4 minutes at 6 cm. distance. This gives approximately 370 roentgen units (Glasser). These are sea-level values; they may be high for high altitudes. The time factor may be divided for fractional treatments and multipled for massive dosage. All other factors should remain fixed. A change in any one will necessitate a change in one or more of the others.

Roughly, most of the technical rules relating to shorter wavelength x-rays pertain to grenz ray therapy: variations in skin toleration due to age, sex, complexion, location, thickness of skin and its various layers, especially the horny layer; disease; idiosyncrasy; impossibility of obtaining an erythema color standard or index; increase of erythema or other visible biologic effect not proportional with increase of quantity or quality of radiation; possible accumulative action of repeated applications; avoidance of extremely large doses, at least until more is known relative to the possibilty of undesirable late results. There are exceptions: grenz rays produce less scattering and fewer secondary rays than do shorter wavelengths; therefore there is less difference in detectable effect when the radiation is applied to large areas as compared to small areas. Because these long wavelengths are absorbed by air, it is necessary to place the tube close to the skin; also distance must be accurately measured and maintained because the percentage of an error at short distance is considerably greater than at the working distance of 8 or 10 inches ordinarily employed with shorter wavelengths. It is advisable to shield the skin immediately around the treated area with thin lead foil. Radiation passes through only the Lindemann glass window; it does not travel far and it does not excite much secondary radiation, therefore it is unnecessary to protect especially the patient's body or the operator.

THERAPEUTIC RESULTS

While the radiation is a valuable therapeutic agent, it is less efficacious, less versatile and more time-consuming than x-rays of shorter wavelength. In spite of the higher degree of safety, the method is not yet suitable for use by any but those who have been adequately trained in x-ray work.

The best field for grenz ray therapy is in dermatology. Here, the results have been good, at least in many diseases. It is especially suitable when it is necessary to avoid temporary or permanent injury to important organs and to glandular apparatus in or under the true skin — hair roots, sebaceous and sweat glands, testes, eyes. Even here there are limitations: with heavy dosage or repeated applications, enough of the shorter wavelengths (contained in the heterogeneous beam) may be absorbed by tissue below the epidermis to effect undesirable and perhaps serious injury. However, the method is comparatively safe and very useful for patches of various dermatoses located on the scrotum, eyelids and scalp—eczema, psoriasis, lichen planus, lupus vulgaris and basal-cell epithelioma.

With tubes available at present, used at a skin-target distance of 6 cm., the exposed area of skin is a circle having a diameter of about 4 cm. Obviously, the method is not suitable for the irradiation of universal, generalized or extensive eruptions.

Published reports of therapeutic results are yet rather meager and they come from comparatively few workers. Most of the favorable results have been obtained with large doses (erythema dose to several or many times the erythema dose—from 3 or 4 hundred to 3 or 4 thousand roentgen units administered at one time and repeated, if necessary, at intervals of from one to several months). There has been little experience with fractions of the erythema dose administered once weekly. Thus far fractional treatment has not been especially successful. In general, it is doubtful whether any skin disease (not an individual case) can be cured with grenz rays that cannot be cured with x-rays of shorter wavelengths or with beta rays of radium. Occasionally, a patch of some inflammatory dermatosis such as eczema or psoriasis that is not favorably influenced with very conservative treatment with x-rays of shorter wavelength will yield to a massive dose of grenz rays; more often, shorter wavelengths succeed when grenz rays fail.

Good results have been obtained in some of the following conditions: patches of eczema of all types, patches of lichen planus and psoriasis, localized essential pruritus, perlèche, warts of various types, lupus vulgaris, Bazin's disease, tuberculosis verrucosa cutis, scrofuloderma, basal-cell epithelioma, superficial cavernous angioma, strawberry mark, port-wine mark,

boils, Kaposi sarcoma, sarcoma of various types, dermatitis herpetiformis, paronychia, ringworm of scalp and skin, acne varioliformis, Darier's disease, mycosis fungoides and poikiloderma. Poor results have thus far followed the use of grenz rays in sycosis, xanthoma, acne vulgaris, keloid, dermatitis papillaris capillitii, alopecia areata, prickle-cell epithelioma, tuberculid and scrofuloderma. With few exceptions the grenz rays have not yet been tried for skin diseases other than those mentioned.

Bucky presented two cases of port-wine mark before the New York Dermatological Society in January, 1930. A portion of each lesion had been treated with heavy doses of grenz rays. The treated parts were distinctly paler than the untreated areas. Since then several dermatologists have endeavored to eradicate port-wine marks with massive doses of grenz rays without success. It is possible that failure is due to conservatism: several or many large doses are required and until such treatment is proved to be without danger cautious dermatologists hesitate to accept the risk. Bucky employs doses of 4,000 r at intervals of two months.

Several dermatologists have obtained results in lupus vulgaris that seem superior to those possible with shorter wavelengths. However, the difficulty just now is that reports of success and failure are, for the most part, based on too few cases, in many instances only one or two patients having been treated. For this reason and because greater technical knowledge is required, several years must elapse before it will be possible to give an accurate or even fair evaluation of the method. Judging by present knowledge, Bucky's prediction that grenz rays will replace x-rays of shorter wavelength in dermatology is too optimistic.

Attempts have been made to influence various internal diseases by applying grenz rays to eight areas on the trunk. The same method (so-called general or indirect treatment in contradistinction to direct irradiation of lesions) has been used, also, for some skin diseases, especially those that involve extensive surfaces, those that are characterized by remissions and exacerbations, and those that are definitely due to some general disturbance. The rationale of indirect treatment is based on the fact that radiation of various kinds (x-rays, radium, ultraviolet rays) if properly employed will at times provoke temporary leukocytosis (leukocyte sturz); also that through the autonomic nervous system such radiation may affect the endocrine glands, general nervous system, general circulation, metabolism or vitamins. Bucky believes that the grenz rays are more efficacious in this respect than radiation of any other wavelength. He gives the following technic for indirect treatment: The torso is divided into four areas, front and back (eight in all). On each of eight successive days one field is irradiated at a distance of 15 cm. with from 150 to 300 roentgen units. When the series is completed a second series is given, following the original sequence, but making the exposures every second day. The two series constitute a course of treatment. As a rule, several courses are administered with intervals of rest depending on indications.

Good results for the indirect grenz ray treatment are claimed for gastric ulcer, gastric hyperacidity, Banti's disease, polycythemia rubra, hypothyroidism, dysmenorrhea, oligomenorrhea, amenorrhea, hypertrichosis, asthenia, arthritis deformans, asthma, pertussis, angina pectoris and spastic constipation. Exophthalmic goiter, Hodgkin's disease and leukemia are not favorably influenced. Indirect treatment was used successfully in a number of skin diseases: acne vulgaris, acne rosacea, universal erythroderma and urticaria. The effect on acne rosacea is said to be especially good.

The results of indirect grenz ray treatment have not yet been corroborated to any extent; also, only a few cases of each disease have been reported. The method and particularly the explanation for the alleged good results have been received with considerable skepticism. It will be necessary to compile statistics from a number of clinics over a period of years before the value of indirect treatment can be ascertained.

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Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

MYLIN NOT ACCEPTABLE FOR N. N. R.

"Mylin" is the uniforming name under which the Mifflin Chemical Corporation markets capsules, each stated to contain: amidopyrine, 3½ grains; caffeine alkaloid 1 grain; oleoresin ginger, ¼ grain; corn starch ¼ grain. The trade package contains no statement of composition but asserts the preparation to be "A very effective uterine sedative" and that its analgesic action is particularly valuable "in cases of dysmenorrhea." The advertising also fails to declare the composition of the product but asserts that it is "the prescription of an eminent chemist for the quick, sure and safe relief of Dysmenorrhea (menstrual pains)." The circular begins "And Then She Found My-lin" and states: "You may obtain MY-LIN from your druggist—12 capsules for 50 cents in a small moisture-proof vial easily carried in your handbag, providing you with a year's supply. Remember MY-LIN brings sure, safe, quick relief." Though all physicians know only too well and all dealers in drugs ought to know quite as well that it is dangerous, and not in the public interest, that the public should take potent drugs like amidopyrine without the advice of a physician and without knowing what they take, nevertheless, the Mifflin Chemical Corporation offers this "prescription" of "an eminent chemist" with the assurance that it is quite safe to take this product for the relief of pain which may be the warning signal for a serious condition.

Mylin is unacceptable for New and Nonofficial Remedies because it is an unscientific mixture of drugs marketed under an uninforming name and with unwarranted claims which will lead to its ill advised use by the public.

COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

H-O HORNBY'S OATS (REGULAR H-O OATS)

Manufacturer.—Hecker H-O Company, Inc., Buffalo, N. Y.

Description.—Oat flakes made from lightly toasted, steam-cooked, whole oat groats. A breakfast cereal.

Manufacture.—Good grade sound oats are cleaned of all foreign material. The cleaned oats in their natural hull covering are mildly toasted in open pan kilns for four hours. The toasted oats are cooled, dehulled between stones and the hulls separated from the oat groats. The oat groats are steam-cooked under pressure, dried, cooled, steamed and tempered in steam chambers, flaked between steel rolls and packed in label-wrapped cartons.

Chemical Composition.—

(Proximate analysis)

Moisture	8.0%
Mineral matter	2.0%
Fat (ether extract)	7.3%
Protein (N × 6.31)	15.2%
Crude fiber	1.3%
Carbohydrates (by difference) other than crude fiber	66.2%

(Proximate mineral analysis)

Calcium (Ca)	0.069
Phosphorus (P)	0.392
Iron (Fe)	0.0038

Calories.—

3.91	per gram
110.0	per ounce
1,776.	per pound

Vitamins.—Contain vitamins B (complex) and E such as are natural to oats and remain unaffected by the light toasting and steam cooking.

Claims of Manufacturer.—Pan toasted and steam cooked.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 10, 1931

METABOLISM IN THE NERVOUS SYSTEM

Until recently, textbooks of physiology have had little to say regarding the metabolism of the nervous system. One cannot penetrate far into the domain of muscle function before being brought face to face with problems of energy exchange. Consideration of muscular contraction inevitably is concerned with the production of work and heat; and such a process in turn involves the production of carbon dioxide and the utilization of oxygen. Nervous excitement and mental activity also may increase metabolism; but, as Mitchell [1] has pointed out, no measurements of this increase have effectively eliminated the muscular contractions that accompany nervous activity. It is certain that most of the increase in metabolism, if any, that occurs during mental work is caused by contractions of skeletal muscles. They are active in maintaining a somewhat rigid posture of the body and in other ways, under these conditions. When complete muscular relaxation is maintained, Mitchell adds, all attempts to detect a rise in metabolism during mental work fail to yield decisive results. The brain constitutes only a small portion of the body weight, so that a small rise in its rate of oxidative metabolism would have little effect on the sum total of the entire body. Emotional states may cause a marked rise in body metabolism; but this may be due to concurrent muscular contractions or to a secretion of calorigenic hormones.

There was a time when the nerves, in particular, were looked on as utterly inert carriers of nervous impulses, presenting an analogy to the conduction of electrical currents along a metallic wire. The heat evolved by a nerve proved to be so extremely minute in amount that it became somewhat doubtful whether there is any metabolism in a nerve fiber. With respect to the masses of nerve cells such as are found in the brain, evidences of chemical changes incident to its function were not quite so negative as in the case of the nerve trunks. With the advent of delicate methods of investigation, the nervous system can no longer be regarded as an inert structure. Fenn [2] of the University of Rochester pointed out in his Harvey Lecture of 1928 that undoubtedly the most important fact that has emerged from all the investigations carried out on nerves is that the still somewhat mysterious wave of excitation differs fundamentally from most other waves, such as the pulse wave, sound waves and water waves, in that the energy to which it owes its progress is derived not from the mechanism or process that initiated the wave at its source but rather from the medium over which it is to pass. It is a sort of self-propagated wave of excitation.

The upshot of the latest observations is that in nervous transmission, unlike muscular contraction, oxidation is a necessary accompaniment.[2] Carbon dioxide is produced, as is a small amount of heat. The recent investigations of Holmes [3] at the University of Cambridge in England indicate that the various types of tissue composing the central nervous system have different rates of oxygen consumption. The activity of the gray matter is in this respect far greater than that of white matter. Evidently there are quite different types of metabolism in the brain and in the purely conducting parts of the nervous system. The rate of oxygen consumption of the conducting elements is of the same order, whether they are central or peripheral. In gray matter the metabolism is of a more intensive kind, different oxidizable substrates being involved. There can no longer be doubt that, in what Foster called the master tissues of the body, the brain as a whole uses oxygen at a much greater rate than does peripheral nerve.

1. Mitchell, P. M.: General Physiology, New York, McGraw-Hill Book Company, 1923.

2. Fenn, W. B.: The Harvey Lectures, Baltimore, Williams and Wilkins Company, 1929.

3. Holmes, E. G.: Oxidations in Central and Peripheral Nervous Tissue, Biochem. J. **24**: 914, 1930.

MILK SUGAR IN INFANCY

The apparent prejudices of scientifically motivated persons are rarely more noticeable anywhere than in the domain of infant feeding. The "styles" in nutrition to which children are subjected in the earliest periods of life have changed from year to year, sometimes in almost a bizarre manner. This is particularly true with respect to the favored carbohydrates that enter into the successive formulas. A study of the history of infant feeding will disclose the recommended use of cereals in various forms, lactose, sucrose, maltose and dextrose as milk "modifiers," diluents or supplements. The vogue of each has been relatively transitory, changes of prescription being instituted by physicians on the basis of clinical criticisms and experimental demonstration. The objectively minded general practitioner into whose care the welfare of the baby is committed has probably often harbored bewilderment while he followed the dictum of the latest "expert." The advertising campaigns also have helped to foment intellectual unrest and an acquiescence in changes of feeding practices.

Today the use of mixtures of maltose and dextrins seems to be in the ascendant. Preferences for various brands are being promoted by all sorts of alluring assurances. There are the questions of digestibility and absorption to be considered at the outset. The comparative sterility of the products also awakens some concern. Further, there are the facts and theories regarding the assimilability of the various carbohydrates, and their metabolic fate. It is conceivable that those sugars or higher polysaccharides which are only slowly digested and absorbed may promote diarrhea; on the other hand, the same characteristics leading to slower entrance of nutrients into the blood stream may facilitate their deposition as glycogen or other modes of physiologic use. Again, the chemical structure—the carbohydrate "pattern"—may be of greater metabolic significance than has been supposed. The normally circulating carbohydrate is dextrose, of which glycogen is a polymer. On the other hand, galactose is a component of lipoidal constituents, notably in the nervous tissue.

It has repeatedly been stated that "lactose, sugar of milk, is animal sugar and is meant for animal development." Indeed, human milk is somewhat richer in lactose than is cow's milk. Milk sugar was widely used at one time in a previous generation as the milk adjuvant of choice in infant feeding, but it has undoubtedly lost its vogue in the practices of present-day pediatrics. Jarvis [1] has remarked that, prior to the twentieth century, disturbances of nutrition giving rise to gastro-intestinal upsets were attributed to lactose per se, and some workers conducted clinical experiments from which it was concluded that lactose is a toxic substance. Apprehension at once arose regarding its use and in a measure has not as yet been dispelled. Today it is known that many of its alleged evils are due to diminished digestibility of the other ingredients of the formulas, to say nothing of the large part played by actual infection within or without the gastro-intestinal tract proper. Jarvis has reported a series of animal feeding tests in which lactose was compared with sucrose and other substances as the sole carbohydrate of the ration. The significant observations were the greater amount of total solids (i. e., less water) in the tissues of the lactose-fed animals. It is also noteworthy that the fat content of lactose-fed animals was less than that of either the control or the sucrose-fed animals. The lower water content of the lactose-fed animals was due partially to the lower glycogen and lipoid content of their tissues and probably also to the slight diuretic and laxative action of the lactose per se. However, of greatest importance is the fact that more living tissue is present in the lactose-fed animal than in either the control or the sucrose-fed animal, weight for weight.

Clinical experience secured by Jarvis at the New York Post-Graduate Hospital has led him to champion a return to the use of lactose in complementary or supplementary diet throughout the period of infant feeding. He alleges that on such a regimen fat babies will rarely be observed and that clinical dehydration is less likely to develop in the presence of parenteral gastro-intestinal upsets with acidosis. He derides the occurrence of protracted nutritional disturbances attributable to the sugar, stating that the lactose-fed infant resembles but does not equal the breast-fed infant in firmness of tissues and resistance toward infections. Here are challenges that mere argument will not silence.

1. Jarvis, B. W.: Milk Sugar in Infant Feeding, Am. J. Dis. Child. 40: 993 (Nov.) 1930.

ACUTE ANTERIOR POLIOMYELITIS IN CALIFORNIA

Certain epidemiologic characteristics of acute anterior poliomyelitis are apparently well established, yet the nature of the virus remains unknown. Moreover, the reports of the prevalence of this disease indicate, at least in California, that it is continually spreading with the occurrence of outbreaks in fairly short intervals; namely, 1925, 1927 and 1930. The method of propagation, however, remains an enigma and offers a distinct challenge to public health authorities. One of the important phases of the disease which make it difficult to recognize and control is the number of abortive cases that must occur in any epidemic. The contagiousness is exceedingly low, the latent immunization of the general public exceedingly high, or the carrier produced by contact to cases of comparatively little moment in the spread of the disease.

According to the figures of the California State Department of Public Health, the outbreak in California in 1930 began to be statistically manifest early in May, the curve rising rapidly to a peak in July (95 and more cases being reported daily), a sharp drop in August (60 and less cases being reported daily) with a gradual climb to a second peak in October (85 or more cases being reported daily) with an abrupt decline in November, 1,707 cases being reported for the period of ten and a half months. The curve of the 1925 outbreak, 821 cases, reached its peak in July, with a sharp decline in August and September and a gradual leveling off, with a small uplift in November. The curve of the 1927 outbreak, 1,298 cases, had a series of peaks in July, in August and in September, with a small uplift early in November. Two centers of population suffered most, Los Angeles and San Francisco, in the outbreak for 1930. The second peak in the curve for 1930 probably represents the San Francisco outbreak, for cases began to be reported there much later than in Los Angeles. Curiously, only a small number of cases were reported in Oakland, just across San Francisco Bay. The age incidence for 1930 presents some interesting data. For instance, 334 cases were reported between the age limits of 15 and 35, approximately 20 per cent of the total; 1,000 cases between 0 and 10 years, 301 from 10 to 15; 35 from 35 to 45; 10 from 45 to 55; 3 over 55, and

the remainder classified as adult unknown or, at present, in doubt. The George Williams Hooper Foundation for Medical Research of the University of California, which distributed convalescent poliomyelitis human serum, reports that during the period of June 1 to Dec. 1, 1930, more than 19,750 cc. was given to physicians and institutions for administration to patients; 10,650 cc. of serum was given to physicians in San Francisco County alone. The number of donors was 202, and 38 were bled twice and 9 three times during the epidemic period.

It is, indeed, fortunate that research institutions have taken up the burden of supplying convalescent poliomyelitis human serum, since this important health department activity has been quite neglected though Netter advocated its use in 1910. The value of such serums is apparently well established and of practical therapeutic importance even in the absence of controls. The prophylactic use of convalescent serum for susceptible contacts cannot be advocated until the supply can meet the drastic needs of epidemic periods.

MECHANISM OF THE SEROLOGIC TESTS IN SYPHILIS

Recent studies on the serology of syphilis by Eagle [1] may change current conceptions of the mechanism of the various tests used in diagnosis. The Wassermann reaction, brought out in 1906, came as the result of the discovery of the principles of complement fixation by Bordet and Gengou [2] in 1901. The antigen first used was made from extracts of syphilitic organs and the reaction was thought to be identical with the complement fixation of any other antigen antibody complex. A year later Michaelis [3] reported a precipitation test for syphilis. Landsteiner [4] and others soon demonstrated that the antigen used in both reactions was not specific and that a more efficient antigen could be made from alcoholic extracts of normal organs. Since then the precipitation and complement fixation reactions in syphilis have been regarded as nonspecific and efforts have been made to explain them on a physicochemical basis. Epstein and Paul,[5] for example, maintain that the syphilitic reagin (antibody) in the flocculation reaction is a positively charged colloid particle, which unites with the negatively charged lipoid particle, causing a mutual discharge and precipitation. Experimental evidence has failed to support this theory. Kendrick and Kahn [6] have shown that the reacting substances in syphilitic serum are associated with the euglobulin and pseudoglobulin fractions. Eagle [7] declares that there is a specifically altered fraction of the serum globulin which is responsible for the precipitation and complement fixation reactions, although several investigators maintain that it is found in other parts of the serum. Nishio [8] believes that the serum globulin fraction will give more sensitive reactions than will the unaltered serum. Eagle determined that, in normal serum, hydrophilic protein is adsorbed and forms a protective film around the lipoid antigen. This film is easily removed by washing. When syphilitic serum is added to the antigen, as in the precipitation test, the specifically altered fraction of the serum globulin is adsorbed by the antigen. This adsorption is irreversible and the serum globulin takes on the properties of a denatured hydrophobic protein in suspension, which precipitates when small quantities of electrolytes are present. Eagle's work indicates that the Wassermann reaction is caused by the same film of hydrophobic protein. He declares that the fixation and precipitation reactions in syphilis are entirely analogous to fixation and precipitation reactions in other antigen antibody complexes. He suggests that the reagin globulin represents an antibody response to products of infection.

Eagle's studies on the cholesterolized antigen also are of interest. Cholesterol was first used with antigens in 1910 when Browning and his associates showed that small quantities of cholesterol increase considerably the sensitivity of the antigen. There has been no satisfactory explanation for this effect. The antigen is ordinarily made up of submicroscopic particles, but the addition of cholesterol causes a great increase in the size of the particles. Eagle demonstrates that the larger the antigen particle the greater its avidity for reagin per unit surface or mass. Cholesterolized antigen is more efficient in the flocculation reactions for the same reason. Cholesterol is not entirely satisfactory, however, because it is only slightly soluble in alcohol. In the concentration used in the various tests, it is difficult to keep in solution. Eagle declares that, since cholesterol is inert in the reactions and acts only to make a coarser dispersion of antigenic particles, any substance with similar physical properties could be substituted. He hopes shortly to report a group of substances that will make a more sensitive antigen especially for fixation.

The work of Eagle as well as that of other investigators seems to leave little doubt that the substance in syphilitic serum responsible for the precipitation and fixation reactions is contained in the serum globulin. Until nonspecific antigens are discovered for other reactions, it will be difficult to accept the reagin-globulin of syphilitic serum as a true antibody. More knowledge of the physical properties of antigens may lead to the discovery of other nonspecific antigens. It would seem from the specificity of the Wassermann, Kahn and other reactions for syphilis that there should be an immune body in the serum. The value of a more sensitive anti-

1. Eagle, Harry: J. Exper. Med. **52**: 717, 739, 747 (Nov.) 1930.
2. Bordet and Gengou: Ann. de l'Inst. Pasteur **15**: 289, 1901.
3. Michaelis, L.: Berl. klin. Wchnschr. **44**: 1477, 1907.
4. Landsteiner, K., and Stanković, R.: Centralbl. f. Bakt. **42**: 353, 1906.
5. Epstein, E., and Paul, F.: Kolloidztschr. **30**: 310, 1922.
6. Kendrick, Pearl L., and Kahn, R. L.: J. Infect. Dis. **39**: 202 (Sept.) 1926.
7. Eagle, Harry: J. Immunol. **18**: 393 (May) 1930.
8. Nishio, M. J.: J. Infect. Dis. **46**: 420 (May) 1930.

gen in syphilis may be questioned. In any case the possibility of getting positive reactions in the non-syphilitic would have to be entirely eliminated. Even with the present cholesterolized antigen, weakly positive reactions are frequently not relied on, other reactions being negative. If a more sensitive antigen would make a sharper differentiation between the adequately and the inadequately treated cases, its value would be unquestioned.

Current Comment

ARTIFICIAL NEUROTROPHIC SYPHILIS

Numerous immunologists have challenged the historic assumption that under all conditions of infection and artificial growth micro-organisms are static in their biochemical specificity,[1] some even going so far as to postulate a hybrid-specificity with environment factors.[2] Experimental evidence in support of this hybridization is seen in current studies of the altered antigenicity of *Spirochaeta pallida* grown under different cultural conditions. Drs. Georgi and Prausnitz [3] of the Hygienic Institute, Breslau, thus report the change of their ordinary stock cultures to strains biochemically neurotrophic. Their stock cultures were grown on ascites bouillon agar to which rabbit kidney had been added. On transferring these cultures to ascites bouillon agar plus rabbit brain, they observed distinct morphologic changes. Immunization of patients and rabbits with these altered strains yielded antiserums that were markedly strain-specific (complement fixation test), control tests ruling out pseudospecificity from test tube adsorption. Such changes, of course, have long been postulated by clinicians from observed microbic differences between initial and recurrent syphilis, spirochetes isolated at these two stages being markedly different in pathogenicity and antibody production in rabbits. Sédallian and Nicolau [4] have reported similar neurotrophic changes in pneumococci. Grown on brain medium, pneumococci show an acquired power of elective localization in the brain of subcutaneously injected mice. This acquired neurotrophism is lost in subsequent cultures in brain-free medium but is reacquired on transference to brain emulsion.

IMMUNIZATION STUDIES IN POLIOMYELITIS

Poliomyelitis, or infantile paralysis, is no longer classed as a rare disease. The management of poliomyelitis and its consequences has made considerable progress, thanks to persistent scientific investigation. The possibility of direct transfer from person to person seems to be well established. Today, most investigators are convinced that poliomyelitis is caused by one of that still vague category of agents, the filtrable viruses. Furthermore, the discovery by Flexner and Lewis and by Levaditi and Landsteiner in 1910 that the serum of patients convalescent from an attack is capable of neutralizing the filtrable virus has been of the greatest importance. According to Park,[1] the serum from slight abortive cases is, on the average, as potent as that from pronounced cases. The serum of many persons who have never had poliomyelitis contains antibodies, but these are not so potent as in the serum of convalescent cases. The antibodies remain for a long time in the blood of persons who are convalescent. It is well known that a variety of viruses can be adsorbed and rendered ineffective by a number of colloidal and particulate chemical substances. Rhoads [2] of the Rockefeller Institute for Medical Research, New York, has recently discovered that poliomyelitis virus can be inactivated by suspensions of aluminum hydroxide. This reaction is promoted in an acid medium and may be prevented by an alkaline environment. The striking feature, however, is the demonstration that the virus, when adsorbed on aluminum hydroxide, is incapable of producing poliomyelitis but still capable of inducing active immunity in *Macacus rhesus*. In a small series of animals thus immunized, symptoms of experimental poliomyelitis did not appear and in only one was the degree of immunity, although adequate to protect against nasal instillation, insufficient to protect against intracerebral injection of virus. Intracerebral inoculations of the aluminum suspension alone were without pathologic effect. The mere recital of these experiments offers a bright prospect of helpful possibilities in the attack against infantile paralysis. It has depended, and will continue to depend, on animal experimentation. This may well be stressed at a time when opponents of experimentation on animals are making vigorous efforts to prevent such studies as are destined to assist in averting one of the most pathetic blights of child life.

UNSUSPECTED PHYSICAL DEFECTS

The Heart Council of Cincinnati has reported the second of a series of studies on the physical status of persons engaged in certain kinds of work.[3] The objective was to determine the extent of diseases of the heart and vascular system. The second report embraces the examination of 1,000 white, male, machine and hand tool operators. The success of these studies depends on the cooperation received from the employer and the employee. While this was generally satisfactory, there were some who would not give up seventy minutes for an examination. The lack of cooperation on the part of some was explained by the notion that workers past 40 years of age are unwanted in industry. The discovery of physical defects might, therefore, be an excuse to put younger men in some jobs. The report is mainly a series of tables, from which one is left to draw one's own conclusions. The Heart Council evidently will reserve its deductions until the series of five studies has been completed. The first report embraced a study of 1,000 white male clerical workers. The third

1. Rosenow, E. C.: The Newer Knowledge of Bacteriology and Immunology, 1928, chapter '3, p. 577.
2. Manwaring, W. H.: J. Immunol. **19**: 155 (Aug.) 1930.
3. Georgi, F., and Prausnitz, C.: Arch. f. Hyg. **103**: 173, 1930.
4. Sédallian, P., and Nicolau, I.: Compt. rend. Soc. de biol. **98**: 710, 1928.

1. Park, W. H., in Jordan and Falk's Newer Knowledge of Bacteriology and Immunology, University of Chicago Press, 1928.
2. Rhoads, C. P.: Immunization with Aluminum Hydroxide Mixtures of Poliomyelitis Virus, Science **72**: 608 (Dec. 12) 1930.
3. Life Conservation Studies: II. Physical Impairment Among Industrial Workers: A Study Made by the Heart Council of Greater Cincinnati through the Industrial Health Conservancy Laboratories.

report, now under way, will embrace 1,000 Negro industrial workers. Interesting observations await one who has the time to figure out these tables. It was found that 87.1 per cent of the group of 1,000 had been vaccinated in some way; 80.2 per cent of them had been vaccinated against smallpox, 22.5 per cent against typhoid, and 21.9 per cent against diphtheria; only 67 per cent of the workers were considered to be on an adequate diet; 56.3 per cent of them had no illness within the last ten years. The cardiovascular lesions noted were indeed numerous. The 45.8 per cent in whom such lesions were found did not include observations of such unproved significance as extrasystoles, trivial hypertrophies and arrhythmias. Those, however, whose lesions were considered significant constituted 31 per cent of the group. The importance of early infections on the heart in later years is shown by the fact that 21.9 per cent of those who had significant heart lesions have a history of illness in the past from some of the common infectious diseases. A relation between excessive weight and myocardial hypertrophy is indicated by the fact that 49.3 per cent of those who were 20 pounds or more above normal weight had myocardial hypertrophy, while only 5.3 per cent of those who were 20 pounds or more underweight had any cardiac lesion. Of the whole group of 1,000 machine and hand tool operators, 83.6 per cent had significant defects of some kind and 88.5 per cent had defects unknown to them or of which they had not complained. The interest in this study is in the extent of the examination as much as in the observations recorded. When a definite health problem becomes a subject of research, the work done, as revealed in this study, is far out of proportion to the immediate needs of the individual or to the requirements for the general practice of medicine.

Association News

THE PHILADELPHIA SESSION

Announcement of Exhibit Under the Auspices of the Section on Urology

The officers of the Section on Urology have authorized a section exhibit in the Scientific Exhibit at the Philadelphia meeting, June 8-12. The membership of the committee on section exhibit is as follows: Leon Herman, M.D., Philadelphia; George Livermore, M.D., Memphis; George Gilbert Smith, M.D., chairman, Boston.

One of the functions of the Section on Urology of the American Medical Association is to cooperate in educational matters. One of the ways in which this educational program can be fostered is by the members of the Section on Urology arranging a well selected exhibit. It is hoped that those of the section who have valuable material to contribute will cooperate. Even though the contribution consists of the presentation of a single outstanding fact, the accumulation of the data should form a valuable urologic exhibit. The aim should be to make the exhibit of interest and of value to the profession at large as well as to members of the specialty.

The members of the specialty are asked to take an inventory of the material that might make an interesting exhibit and make application for space on the regular application form required by the Committee on Scientific Exhibit. A circular letter giving information concerning this exhibit, together with the usual application blank, has been mailed to those who have registered in the section during the last three years. Those who have not registered in this section but who are interested in such an exhibit may obtain a circular letter and application blank by sending a request to Dr. George Gilbert Smith, 6 Commonwealth Avenue, Boston, or to Director, Scientific Exhibit, 535 North Dearborn Street, Chicago. Applications should be filed not later than February 10, with Dr. Smith.

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING MEMORIAL

The sum contributed for the Pershing Memorial in Paris brings the total for this week to $884. The list of those who contributed during the current week follows:

Wirt B. Dakin, M.D., Los Angeles
S. R. Cohen, M.D., Pittsburgh
A. Sleeth, M.D., Farlington, Kan.
John A. Metzen, M.D., Buffalo
E. Ray Royer, M.D., N. Salem, Ind.
Henry C. Stranquist, M.D., Ogden, Utah
Charles A. Yoder, M.D., Elm Creek, Neb.
Irving J. Spear, M.D., Baltimore
E. D. Friedman, M.D., New York
John B. Potts, M.D., Omaha
J. H. Judd, M.D., Omaha
William H. Stokes, M.D., Omaha
Ernest L. Shore, M.D., Atlantic City, N. J.
Frank R. Slopanskey, M.D., Salt Lake City
J. H. Bacon, M.D., Peoria, Ill.
Donald Miner, M.D., Jersey City
William J. Stapleton, Jr., M.D., Detroit
The Chicago Medical Post of the American Legion, Chicago
W. H. Walsh, M.D., Chicago
S. A. Levine, M.D., Boston
Herbert M. Long, M.D., Pittsburgh
Augustus A. Eshner, M.D., Philadelphia
W. E. Ryan, M.D., Midland, Texas
Charles H. Vinton, M.D., Philadelphia
E. J. Thompson, M.D., Pittsburgh
Jerome S. Leopold, M.D., New York
Harry Blackford, M.D., Seattle
Harry L. Langnecker, M.D., San Francisco
Bernard L. Wyatt, M.D., Tucson, Ariz.
Livingstone L. Lewis, M.D., Hoboken, N. J.
Edward Adams, M.D., New York
John T. Humphries, M.D., Palestine, Texas

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:15 on Tuesday, 10:45 on Thursday and 10 on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

January 12. The Greatest Luxury is Life.
January 13. The Safest Place in Town.
January 15. The Magic of Written Words.
January 17. And This Is the Twentieth Century.

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays, from 12 to 12:05 p. m.

The program for the week is as follows:

January 12. If I Were Twenty-One Again.
January 13. An Unpaid War Debt.
January 14. Don't Blame the Weather.
January 15. Infantile Paralysis.
January 16. It's Only a Boil.
January 17. Cleanliness a Critical Censor.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—The University of Arkansas School of Medicine, through Dr. Frank Vinsonhaler, dean, has entered into an agreement with the City General Hospital of Little Rock to take charge of charity cases for teaching purposes.—— Drs. Sterling P. Bond and Kingsley W. Cosgrove, Little Rock, addressed the Arkansas County Medical Society, Stuttgart, Nov. 11, 1930, on "Care of the Urinary Bladder in Surgical and Obstetric Cases" and "Convergent Type Strabismus," respectively.——A symposium on tuberculosis featured the meeting, Dec. 4, 1930, of the Craighead-Poinsett Medical Society. The speakers were Drs. Homer A. Stroud, Jonesboro; Charles H. Lutterloh, Jonesboro; Roscoe M. Jernigan, Jonesboro; Charles A. Bates, Lake City; Herbert H. McAdams, Jonesboro, and John H. McCurry, Cash.——Drs. Shelby B. Hinkle

and Darmon A. Rhinehart, Little Rock, presented papers on "Obstetric Anesthesia" and "Injuries of the Forearm and Wrist," respectively, at the Nov. 6, 1930, session of the Ouachita County Medical Society, Camden.

DISTRICT OF COLUMBIA

Ventilation of Motor Buses. — Ventilating systems on motor coaches of two transportation companies in the District of Columbia were declared inadequate after tests made by the District health department showed that the air in the coaches contained 20 parts of carbon dioxide in 10,000. The report, with recommendations for additional ventilating facilities, was forwarded to the public utilities commission, which sent copies to all local bus companies.

FLORIDA

Public Health Association Organized. — At a meeting called at Jacksonville, December 8-10, by Dr. Henry Hanson, Jacksonville, state health officer, a state public health association was formed. More than 150 health workers attended. Among the speakers were Drs. Henry Mason Smith, Tampa, president of the board of health, on "Purpose and Ideals of the Board of Health"; Henry Hanson, "State Health Program"; John A. Ferrell, International Health Board, New York, "Cooperation of Outside Agencies"; Warren F. Draper, Washington, D. C., assistant surgeon general, U. S. Public Health Service, "Importance of Unified State Program"; Mark F. Boyd, Rockefeller Foundation, "Importance of Local Health Organizations." Officers elected were Drs. Hanson, president; George N. MacDonell and Noble A. Upchurch, vice presidents, and Stewart G. Thompson, D.P.H., secretary-treasurer.

GEORGIA

University News.—Emory University School of Medicine, Atlanta, has announced that a new laboratory and a fellowship to be known as the Joseph Brown Whitehead Laboratory of Surgical Research and the Joseph Brown Whitehead Fellow in Surgical Research are to be established as the gift of Joseph Brown Whitehead, Jr., in memory of his father.

Society News.—The Atlanta Clinical Society, Oct. 29, 1930, presented a program on "Confederate medicine" in which members impersonated physicians of the period in the presentation of various phases of medicine in the South during the Civil War. Dr. Lewis M. Smith, president, as Col. Samuel Preston Moore, surgeon general of the Confederate armies, introduced the speakers. Among them were Dr. William A. Smith, who as Dr. John B. Davidge, a founder of the University of Maryland Medical School (1807), described the medical schools of the time; Dr. Launcelot Minor Blackford, as editor of the *Georgia Blister and Critic* (1854-1860), reviewed medical literature; Dr. Lynn Fort, Jr., as Dr. Edward Warren, surgeon general of North Carolina, and Dr. Joseph C. Massee, as Dr. James McFadden Gaston, surgeon general of Anderson's division, told of the experiences of military surgeons. Dr. Herbert S. Alden, impersonating Captain H. Wurz, adjutant of Andersonville prison, described prison conditions. Preceding the historical program, Mr. George W. West gave an address, "The Business Man Looks at the Doctor," and Dr. Russell H. Oppenheimer spoke on "Problems in the Future of Medicine." Dr. Thomas Bolling Gay, Jr., projecting himself into the future as "The Last Survivor of the Atlanta Clinical Society," recalled "the ignorant days of 1930."

INDIANA

Fined for Fraudulent Insurance Examinations.—Dr. Fred A. Kimble, Anderson, was recently brought to trial on a charge of submitting fraudulent medical examinations in connection with applications for life insurance in the Modern Woodmen of America. It was charged that in one case he filled out an examination report on a person who was not before him but was in the state of Arkansas at the time of examination. The case against Dr. Kimble, who was an examining physician for the Modern Woodmen of America in Anderson, is one of seventeen actions growing out of alleged fraud in which the order claims to have been swindled out of several thousands of dollars, it is reported. Before a jury in the Anderson Circuit Court, Kimble pleaded guilty and was fined $500.

IOWA

Society News. — Dr. Joseph Brown addressed the Des Moines Academy of Medicine and the Polk County Medical Society, Nov. 25, 1930, on "The Physiology of Menstruation."——Dr. Jay A. Myers, Minneapolis, addressed the Iowa Tuberculosis Association, Nov. 14, 1930, at Des Moines, on "The Health of the School Child."——The first meeting of the newly organized Iowa Academy of Ophthalmology and Otolaryngology will be held, February 12; Dr. Gordon F. Harkness, Davenport, is chairman, and Dr. William F. Boiler, Iowa City, secretary. The purpose of the organization is the presentation of clinical cases; physicians who confine their practice to eye, ear, nose and throat work are eligible for membership.——Drs. Carl M. Anderson and Walter I. Lillie, Rochester, Minn., will address the Sioux Valley Eye and Ear Academy, January 20, at the Martin Hotel, Sioux City, on "The Paranasal Sinuses as a Focus of Infection" and "Retrobulbar Neuritis, Its Etiology and Treatment," respectively.——The Carroll County Medical Society, acting as host to physicians from Audubon, Crawford, Greene and Sac counties, was addressed, Nov. 5, 1930, by Drs. Lawrence D. Smith and Abraham G. Fleischman, both of Des Moines, on "Sterility in the Female" and "Sterility in the Male," respectively.——Dr. Cecil S. O'Brien, Iowa City, discussed "Transient Blindness" before the Cerro Gordo County Medical Society, Nov. 18, 1930.——The Decatur County Medical Society, Leon, was addressed, Nov. 21, 1930, by Drs. Caryl A. Potter, St. Joseph, Mo., and Channing G. Smith, Granger, on "Gynecology with Therapy" and "Medical Economics," respectively; Dr. Julius S. Weingart, Des Moines, conducted a clinical pathologic conference.——"Pleural Fluids" was the subject of an address by Dr. Logan Clendening, Kansas City, Mo., before the Linn County Medical Society, Nov. 13, 1930.——The Webster County Medical Society was addressed, Nov. 18, 1930, by Dr. Richard B. Hullsiek, St. Paul, on hematuria, and Dr. Harold E. Hullsiek, St. Paul, "Benign Polyps of the Colon and Their Relation to Malignancy."——The Botna Valley Medical Society was addressed, Nov. 14, 1930, by Drs. John E. Summers, Omaha, on "An Emergency Substitute for Blood Transfusion"; Donald Macrae, Jr., Council Bluffs, "Degrees of Emergency in Acute Abdominal Surgical Symptoms," and W. Eugene Wolcott, Des Moines, "Fractures of the Neck of the Femur, Intracapsular and Extracapsular."——The Upper Des Moines Medical Society was addressed, December 9, among others, by Drs. J. H. Bruce, Fort Dodge, on "Hemorrhage in Obstetrics"; Matthew T. Morton, Estherville, "Management of Diabetes in Adults," and Quintus C. Fuller, Milford, "The Future of Medical Practice"; Dr. Harold L. Brereton, Emmetsburg, introduced moving pictures on "Surgical Treatment of Peptic Ulcers" and "Traumatic Surgery of the Extremities."

LOUISIANA

Society News.—The Orleans Parish Medical Society was addressed, Nov. 24, 1930, by Drs. Allan C. Eustis on "Angina Pectoris: Coronary Thrombosis and Coronary Sclerosis"; Amédée Granger, "Treatment of Mastoiditis of Infants with Fractional Doses of Roentgen Rays," and Earnest Carroll Faust, "Incidence and Significance of Infestation with Endameba Histolytica in New Orleans and in the American Tropics."

Personal.—The Iberville Parish Medical Society, Plaquemine, gave a banquet in honor of Dr. Whyte Glendower Owen, White Castle, December 2, in celebration of his completion of fifty years in the practice of medicine.——Dr. Edwin S. Freeman has assumed his duties as health director of the Madison Parish Health Department with headquarters in Tullulah.——Dr. Walter C. Coney, Jonesville, has been appointed director of the Catahoula Parish Health Unit.

MINNESOTA

George Georgeopoulous Denied Citizenship. — "Dr." George, alias George Garoponlo, alias George Denison Georgeopoulous, was denied citizenship in the United States after a hearing in federal court, December 22. He was arrested in St. Paul, July 2, 1929, charged with violating the basic science law in that he attempted to diagnose and treat an ailment which he called syphilis but which in reality was a minor skin disorder. He pleaded guilty to the charge, Oct. 7, 1929, and paid a fine of $250 (THE JOURNAL, Nov. 2, 1929, p. 1390). Investigation by the government disclosed that "Dr." George had told a story different from the statement of facts to which he pleaded guilty.

Society News. — The St. Louis County Medical Society sponsored a meeting of 800 industrial workers, December 3, in Duluth, the second of a series of safety conferences being conducted by the chamber of commerce. Dr. George A. Earl, St. Paul, chairman of the committee on public health education of the Minnesota Medical Association, gave an address on "Value of Health to Industry." Among other

speakers were Drs. G. Clement, on the use of the x-rays in industry, and William A. Coventry, "Relation of Surgery to Industrial Disability."——The Minnesota Radiological Society was addressed, in October, by Dr. Harry M. Weber, Rochester, on "Air Injection in Diagnosis of Lesions of the Colon," and Dr. Walter H. Ude, Minneapolis, "Roentgen Studies on the Onset of Lobar Pneumonia."——The Range Medical Society was recently organized at Virginia to provide for medical men unable to attend regularly the monthly meeting of the St. Louis County Medical Society, with which the new society will be affiliated. A meeting will be held the first Thursday of each month in one of the range towns and will be open to physicians and surgeons practicing on the Vermilion and Mesaba ranges, Northern St. Louis County and Itasca and Koochiching counties. At least one session each year will be held in Ely and Grand Rapids, other sessions in Eveleth, Virginia and Hibbing. Dr. Henry E. Binet, Grand Rapids, was elected president, and Dr. Fred McK. Ruby, Hibbing, secretary.

MISSISSIPPI

Society News.—At the Nov. 19, 1930, meeting of the North Mississippi Six-County Medical Society, New Albany, Drs. William H. Anderson, Booneville, spoke on "The Future Rôle of the Family Physician in Organized Medicine"; Harold J. Gondolf, New Orleans, "Amebic Dysentery"; James B. Stanford, Memphis, Tenn., "Some Ophthalmoscopical Problems of the General Practitioner"; George A. Brown, Water Valley, "Injection Treatment of Varicose Veins," and Peter Whitman Rowland, Jr., Memphis, Tenn., "A Consideration of Deaths from Heart Disease."

NEBRASKA

Society News.—Physicians of Dawes County recently organized the Dawes County Medical Society. Dr. Milton B. McDowell, Chadron, was elected president.——Dr. Philip Romoneck, Omaha, presented a paper on "Reeducation of the Voice Following Complete Laryngectomy for Carcinoma of the Larynx" before the Omaha-Douglas County Medical Society, Nov. 25, 1930.

Hospital News.—Reorganization of the staff of the state orthopedic hospital at Lincoln into departments was proposed to the state board of control recently by a committee of physicians. The physicians offered the services of the needed specialists free of charge for a demonstration period of one year. The committee included representatives of the state medical association as follows: Drs. Karl S. J. Hohlen, Lincoln, president; Lucien Stark, Norfolk, president-elect; Harry E. Potter, Fairbury, and Benjamin F. Bailey, Lincoln. Representatives of the Lancaster County Medical Society were Drs. Roy B. Adams, Lincoln; Joseph J. Hompes, Lincoln, and Roy H. Whitham, Lincoln. Dr. George W. Covey represented the Lincoln General Hospital.

NEW YORK

District Health Officer Retires.—Dr. Edward Clark, Buffalo, district state health officer for the counties of Erie, Genesee, Niagara and Orleans since 1914, retired from the state health service, January 1. Dr. Clark, who is the first district health officer to reach the retirement age, was appointed by the late Dr. Hermann M. Biggs as sanitary supervisor, a title that was later changed to district state health officer. Dr. Archibald S. Dean, formerly stationed at Jamestown, succeeded Dr. Clark.

Personal.—Dr. Hugh E. Burke has assumed his duties as director of the research laboratory at the New York State Tuberculosis Sanatorium, Ray Brook, succeeding Dr. David T. Smith, who, after five years' service, resigned to become associate professor of medicine at Duke University School of Medicine, Durham, N. C.——Dr. Joseph Waldron Moore, Matteawan State Hospital, Beacon, has been named chairman of the Parole Board of New York State to succeed Judge Irving Goldsmith.

Cold Prevention Classes Organized at Cornell.—It was recently announced that cold prevention classes are being established at Cornell University, Ithaca. This plan, which is based on results achieved last year in practically eliminating the annual epidemic of colds among students, is said to be the most comprehensive that any university has organized for improving student health. Last year the ultraviolet ray solarium at Cornell was credited with a 40 per cent reduction in the number of colds among those taking the treatment. The treatment as planned will provide weekly ultraviolet ray baths, alkalization, instruction regarding diet and ventilation, and in selected cases a special study of the nose and throat and the use of a catarrhal vaccine. It is hoped that students who have four or more colds a year will join the classes.

The Largest Single Supply of Radium.—With the delivery of the supply of radium purchased with an appropriation of $300,000 made by the New York State Legislature, the State Institute for the Study of Malignant Disease at Buffalo has the largest single supply of radium in the world, it is reported. The institute has 2 Gm. in solution, from which the emanation, or radon, is pumped every twenty-four hours for treatment purposes; it has 4 Gm. in forty platinum containers of 100 mg. each, which can be used collectively in a 4 Gm. pack, redistributed in a number of smaller packs or used individually. The institute also has 1.77 Gm. distributed among needles and plaques for application in the treatment of malignant diseases. The entire collection makes a total of 7.77 Gm. With the exception of 51 mg., which was given to the institute in 1914 by a citizen of Buffalo, the radium has been purchased through appropriations by the state legislature. In 1920 the legislature appropriated $225,000, with which the institute purchased 2 Gm. of radium and the necessary appliances to put it in operation. In 1930 the legislature appropriated $300,000, with which 5.74 Gm. was procured. The first radium was purchased from an American producing company at $89,000 a gram. The recent purchase was made from a Belgian company at $50,000 a gram.

New York City

The Fourth Harvey Lecture.—Dr. Franz Alexander of the University of Chicago will give the fourth Harvey Society lecture at the New York Academy of Medicine, January 15, on "Psychoanalysis and Medicine."

Maggot Treatment of Osteomyelitis.—The Hospital for Joint Diseases invites physicians to refer patients of all ages and in all stages of osteomyelitis for observation and treatment in connection with a special study of the maggot treatment. Bed patients will be admitted daily between 9 a. m. and 5 p. m. Ambulatory patients should be referred to the outpatient department Wednesday and Friday afternoons between 1 and 2 p. m.

Society News.—At the one hundred and twenty-fifth annual meeting of the New York Academy of Medicine, Nov. 24, 1930, officers were elected as follows: Drs. Charles Gordon Heyd, president; David J. Kaliski and Terry M. Townsend, vice presidents; Daniel S. Dougherty, secretary; James Pedersen, treasurer. The Greater New York Committee on Health Examinations, through its chairman, Dr. Abraham J. Rongy, presented a report which included an outline of a five year plan for the promotion of health examinations and for the development of more elaborate instruction in medical schools in the examination of apparently healthy persons.

PENNSYLVANIA

Society News.—Dr. Gustav F. Berg, Pittsburgh, addressed a joint meeting of the Indiana and Jefferson county medical societies in Punxsutawney, December 11, on "Open Reduction of Fractures."——Dr. William H. Guy, Pittsburgh, addressed the Mercer County Medical Society, Greenville, December 18, on "Lesions About the Oral Cavity."——The program of the Nov. 4, 1930, meeting of the Dauphin County Medical Society, Harrisburg, consisted of a symposium on neurology, the speakers being Drs. William C. Sandy, Gordon F. Willey and Edward M. Green; Dr. David E. Hoff addressed the society, December 2, on "Orthopedic Surgery."——Dr. Charles W. Wainright, Jr., Baltimore, addressed the York County Medical Society, Nov. 20, 1930, on "Undulant Fever in the United States."——The Cambria County Medical Society was addressed, Nov. 13, 1930, by Dr. Henry K. Mohler, Philadelphia, on "Disturbances of Carbohydrate Metabolism in Relation to Cardiovascular Disease."

Chiropractors Convicted in Pennsylvania.—In two cases recently before the courts of Pennsylvania, the practice of chiropractic has been held to be the practice of medicine as that term is used in the medical practice act of the state. In *Long et al.* v. *Metzger et al.*, the appellant chiropractors sought to enjoin the state board of medical education and licensure from proceeding criminally against unlicensed chiropractors, contending, among other things, that the medical practice act does not purport to and does not in fact regulate the practice of chiropractic. The Supreme Court of Pennsylvania held that the practice of chiropractic is comprehended in the term "practice of medicine" as used in the medical practice act and that since no fundamental question of constitutionality or legal right

was involved in the case, there was no basis on which a court of equity could restrain criminal proceedings. In a subsequent case, *Commonwealth of Pennsylvania* v. *Long*, the defendant, one of the chiropractors involved in the earlier case, was charged with violating the medical practice act. The Superior Court of Pennsylvania, in affirming the judgment of the trial court convicting the defendant, said that the right of the commonwealth to regulate the practice of medicine and surgery, using those terms in their broad and comprehensive sense, and to prescribe the conditions under which persons may pursue the profession of the healing art, is well recognized as a part of its police powers. The adopter of every new cult alleged to be of benefit in the healing of disease has no constitutional right to practice it as a profession, on his fellow men, simply because the legislature has not provided for examining into his knowledge and skill with respect to it, or for issuing a license to him to practice it as a branch of the healing art. The same rule applies to him as to every one else, the court said; he cannot practice without complying with the requirements of the medical practice act. That this may entail a longer course of instruction, a wider knowledge and a greater skill than he may think necessary is unimportant. The criterion is what the legislature has enacted, not what his personal opinion may be.

Philadelphia

Hospital News.—Broad Street Hospital is the new name of the Woman's Southern Homeopathic Hospital, 739 South Broad Street. The change in name was part of a program of expanding activities of the hospital to serve all persons of moderate means instead of restricting its facilities to women.

Personal.—Dr. David Riesman, professor of clinical medicine, University of Pennsylvania School of Medicine, has been appointed consultant to the Committee on the Costs of Medical Care.——Drs. Thomas A. Shallow and Edward J. Klopp have been appointed professors of surgery, and Drs. Charles F. Nassau and Arthur E. Billings, clinical professors of surgery at Jefferson Medical College.

Society News.—Physicians who participated in a tumor clinic held under the auspices of the Medical Society of the State of Pennsylvania at the Jefferson Medical College and Hospital, Dec. 12, 1930, were Drs. Edward J. Klopp, "Function of Tumor Clinic; Tumors of the Mammary Gland"; Brooke M. Anspach, "Tumors of the Female Generative Organs"; Thomas C. Stellwagen, "Tumors of the Bladder and Prostate"; Baxter L. Crawford, "Methods of Histological Examination of Tumors, Biopsy; Including Mammary Gland, Larynx and Uterus"; Virgil H. Moon, museum demonstration of regional tumors; Louis H. Clerf, bronchoscopic and esophagoscopic methods; Willis F. Manges, x-rays; William S. Newcomet, radium; W. H. Kraemer, chemotherapy; Bruce L. Fleming and George E. Marcil, demonstration of records and follow-up system and of cases in tumor clinic.——Ura G. Rickert, D.D.S., Ann Arbor, Mich., will be the speaker for the "medical and dental night" of the Philadelphia County Medical Society, January 14, on "Etiologic Relationship Between Pulp-Involved Teeth and Their Secondary Effects." Dr. Charles H. Frazier delivered one of the lectures in the series of graduate seminars given under the auspices of the society, December 19, on "Surgical Aspect of Intracranial Lesions."——Dr. Abraham M. Rechtman, among others, addressed the Northern Medical Association of Philadelphia, December 15, on "The Maggot Treatment of Osteomyelitis."——Dr. Lewis Webb Hill, Boston, addressed the Philadelphia Pediatric Society, December 9, on "Observations on Eczema with Special Reference to the Use of a Milk Free Diet."——Dr. Fred P. Currier, Grand Rapids, Mich., addressed the Philadelphia Urological Society, December 22, on "Nervous Diseases and Their Relation to Bladder Symptoms."

TENNESSEE

Portrait of Dr. Plunket.—A feature of the fourth annual Tennessee Health Workers' Conference in Nashville, December 18-20, was the presentation of a portrait of Dr. James D. Plunket, first president of the Tennessee State Board of Health, to the state department of public health. The painting was made by Miss Ella Hergesheimer of Nashville, and is to be permanently preserved in the office of the commissioner of public health as a memorial to Dr. Plunket. As one of the leaders in the campaign for a city board of health, he was named chairman of the first Nashville Board of Health in 1866. Dr. Plunket became the first health officer of Nashville. When a state board of health was authorized by law, he was the first member named, served in an advisory capacity in the selection of the remaining four members, and was the first chairman.

TEXAS

Personal.—A. Lawrence Bennett has been appointed associate professor of physiology, succeeding Philip L. Gray, resigned, at the University of Texas School of Medicine at Galveston; Dr. Harris S. Williams has been transferred from experimental surgery to surgical pathology, and Dr. Robert L. Moore has been appointed to succeed him.

Society News.—Dr. William R. Thompson, Fort Worth, was elected president of the Texas Ophthalmological and Otolaryngological Society, at its annual meeting in Houston, December 6, and Dr. A. F. Clark, San Antonio, secretary. The next meeting will be in San Antonio.——Dr. Andrew B. Small, Dallas, was elected president of the North Texas Medical Association at its fiftieth annual meeting, December 9-10, at Paris. Denton was selected as the place of the 1931 meeting. Other officers are Drs. Owen R. O'Neill, Paris, vice president; Ralph S. Usry, Dallas, secretary-treasurer, reelected.

UTAH

Society News.—Dr. William J. Kerr, San Francisco, addressed the Salt Lake County Medical Society, Oct. 20, 1930, on "Use of Quinidine in the Treatment of Cardiac Irregularities"; the society was addressed, October 27, by Drs. Ralph T. Richards on "Megacolon—Surgical Removal"; Leland R. Cowan, "Carcinoma of the Antrum of Highmore"; Juel E. Trowbridge, "Acute Atrophy of the Liver"; Russell W. Owens, "Rupture of the Uterus"; Roy Groesbeck, "Skull Fracture with an Unusual Paralysis."

WEST VIRGINIA

Society News.—The Fayette County Medical Society was addressed, Nov. 11, 1930, by Drs. Caspar L. Woodbridge, Montgomery, on "Treatment of Perforative Appendicitis"; Robert P. Woods, Oak Hill, and Frank S. Harkleroad, Harvey, presented a paper with a case report on "Diseases of Allied Conditions of the Urinary Tract."——"Tuberculosis and the Family Doctor" was the subject of Dr. John E. K. Flannagan, Salem, Va., before the Mercer County Medical Society recently.——The Wyoming County Medical Society was organized, Nov. 18, 1930, at a meeting which was attended by Dr. Walter E. Vest, Huntington, and Mr. Joe W. Savage, Charleston, president and secretary, respectively, of the state medical association.——Dr. Percy S. Pelouze, Philadelphia, addressed the Ohio County Medical Society, December 19, on "Gonococcal Infection."——Dr. William R. Laird, Jr., Montgomery, read a paper on cholecystitis before the Fayette County Medical Society at Fayetteville, December 9.

GENERAL

Society News.—A meeting of the board of directors of the Medical Women's National Association is to be held in Chicago, January 16. A banquet will be given in their honor by Chicago members of the association. Medical women are invited.

Grants for Research in Dental Therapeutics.—The Committee on Pharmacology and Therapeutics of the Council on Dental Therapeutics of the American Dental Association announces that it has at its disposal a small fund to aid investigations which may be of therapeutic interest in the field of dentistry. The grants will be limited to the purchase of materials or special equipment. Applications should be addressed to the secretary, Samuel M. Gordon, Ph.D., American Dental Association, 58 East Washington Street, Chicago.

Warning Against Impostor.—The California Board of Medical Examiners has sent out a warning concerning one Charles F. Baker, who claims medical qualifications and whose whereabouts are unknown. Baker is said to be in possession of a fraudulent letter of recommendation with a forged signature of Sister Regina of Mary's Help Hospital, San Francisco, where he was employed for several months as a roentgenologist. The man is said to have an extensive prison record. An investigation by the California board in 1917 showed that one C. F. Baker, claiming to be a graduate of Georgetown University, Washington, D. C., had been committed to San Quentin Prison for forgery. Georgetown University reported that it had no record of such a name.

Name Changed on a McGill Diploma.—Warning is given by the California Board of Medical Examiners against a man giving the name of Peter Cyril Werba, who is reported to be using fraudulently a diploma from McGill University Faculty

of Medicine, Montreal. Werba is said to have worked in 1928 for the Alaska Packers' Association as a male nurse. In 1929 he again applied for a position, this time as a physician and surgeon, presenting a diploma from McGill University. The man was sent to Alaska, but examination of his diploma in the course of the season showed that the name of the person to whom it was originally issued had been erased and the name of Werba substituted. Authorities at McGill reported that no person of that name had ever been a student there. When Werba returned from Alaska he was advised to discontinue posing as a doctor, but the diploma is said to be still in his possession.

Congressman Criticizes Antivivisection Bill.—Congressman Wright Patman, Texas, subjected the antivivisection bill now before Congress to severe criticism in a minority report submitted December 3. The bill, in which it is proposed "to prohibit experiments on living dogs in the District of Columbia," is obviously intended to hamper government research laboratories now located in the District, Mr. Patman pointed out. Advocates of this type of legislation have for years annoyed legislators and have even threatened to bring pressure against candidates who opposed their program, he asserted. Antivivisectionists admit that the present bill represents the beginning of a program to do away with all use of animals for scientific and research purposes, the report said. "Sanction of the bill, if carried to its logical conclusion, would mean reversion to the dark ages in medicine as refers either to man or to animal, for it must be remembered that much experimental work is exclusively for the benefit of animals."

Directory of Psychiatric Clinics.—The National Committee for Mental Hygiene announces that a directory of psychiatric clinics is now in preparation. The material heretofore published as the "Directory of Psychiatric Clinics for Children in the United States" is to be extended to include clinics for adults. In order that all clinics accepting psychiatric cases for psychiatric study and treatment may be included in this directory, the committee asks that directors of clinics, if they have not already received a questionnaire requesting information, communicate with Dr. George S. Stevenson, National Committee for Mental Hygiene, 370 Seventh Avenue, New York City. The directory will contain descriptions of psychiatric services offered by state health departments, a list of state hospitals and institutions for mental cases and a statement of the activities of state and local societies for mental hygiene, but will not list services offered on a private pay basis.

CANADA

Epidemic of Septic Sore Throat.—Several hundred persons were ill and five had died in an epidemic of septic sore throat at Kirkland Lake, northern Ontario, it was reported December 19. Dr. W. J. Bell, deputy provincial health minister, who visited the town, found that the source of the infection had been traced to the milk supply, according to newspaper reports.

Dr. Hincks to Head Mental Hygiene Committee.—Dr. Clarence M. Hincks, Toronto, founder and director of the Canadian National Committee for Mental Hygiene, whose appointment to the directorship of the National Committee for Mental Hygiene of the United States was recently announced, will remain as director of the Canadian Committee also, according to the *Canadian Medical Association Journal.*

Dr. Guérin Honored.—Dr. James J. Guérin, Montreal, was recently entertained at a luncheon given by the staff of the Hôtel Dieu de St. Joseph, marking his completion of fifty years' service to the hospital. He was presented with a silver cup engraved with the names of the staff and with a silver facsimile of the record of his first patient who was discharged from the hospital cured. Dr. Guérin, who has been clinical professor of medicine at the University of Montreal Faculty of Medicine, is 74 years old.

Personal.—Dr. Bernard T. McGhie, superintendent of the Ontario Hospital for Feebleminded, Orillia, and director of mental clinics for the province, has been appointed to the newly created post of director of hospitals for Ontario.——The council of the Royal College of Surgeons recently conferred the honorary fellowship of the college on Dr. Frederick G. Banting, University of Toronto, discoverer of insulin.——Dr. J. W. McIntosh has been appointed medical officer of health of Vancouver, B. C., to succeed Dr. Frederic T. Underhill, who resigned in September, 1930, after thirty-two years of service.

Lectures for General Practitioners.—A course of lectures for the general practitioner is in progress at the Toronto Academy of Medicine. Each fellow of the academy is privileged to bring a regular medical practitioner who is not a fellow. Physicians who are to speak at coming lectures, their subjects and the dates are as follows:

William Goldie, January 14, "Management of the Infirmities of Old Age."
Robin Pearse, January 21, "Renal Pain, Diagnosis and Treatment."
Ernest F. Risdon, January 28, "Diseases of the Teeth and Jaws."
Reginald S. Pentecost, February 4, "Deafness—Prevention, Differential Diagnosis and Cure."
Clarence B. Farrar, February 11, "Psychiatric Conditions in General Practice."
Gordon E. Richards, February 18, "Radium—Proven Uses and Limitations in Therapy."
Wilhelm E. Blatz, February 25, "Problems of the Nervous Child."

PHILIPPINE ISLANDS

Commission to Fight Tuberculosis.—A commission with an appropriation of $100,000 to carry on a campaign against tuberculosis in the islands was created by an act of the Philippine legislature in November. Under the provisions of the act, the commission, which is to consist of seven members appointed by the governor-general with the consent of the senate, will make a survey of tuberculosis, plan scientific investigations, including selection of sites for sanatoriums, raise funds from private sources for local use, and supervise all activities related to tuberculosis in the Philippine Islands. It is also empowered to establish and help maintain institutions and agencies for prevention and cure, to institute nutrition classes and organize health activities among school children, and to give technical advice to any province or municipality wishing to establish a preventorium or outdoor camp at its own expense.

FOREIGN

New Journal on Urology.—The first issue of *Archivos do Servico de Vias Urinarias,* published by the department of urology and venereal diseases of the General Polyclinic Hospital of Rio de Janeiro, Brazil, has just appeared. Dr. Belmiro Valverde, head of the department, is the editor. The first volume has 220 pages with illustrations. The conclusions of each article are given in five languages: Portuguese, French, Italian, English and German.

Personal.—Dr. Geoffrey B. Fleming, Glasgow, Scotland, has been appointed to the Samson Gemmell chair of medical pediatrics in connection with the Royal Hospital for Sick Children, succeeding Dr. Leonard Findlay, who resigned.——Dr. Thomas G. Moorhead, regius professor of physic in the University of Dublin, has been elected president of the Royal Academy of Medicine in Ireland.——Sir Arthur Keith has been appointed rector of Aberdeen University.

Australian Association Opens New Headquarters.—The New South Wales branch of the British Medical Association celebrated the fiftieth anniversary of its founding with the opening of a new fourteen-story building in Sydney, Oct. 3, 1930. Sir Philip Woolcott Game, governor of New South Wales, performed the opening ceremony and Dr. E. M. Humphery, president of the branch, made the principal address. The New South Wales branch is the largest outside the United Kingdom, having 1,720 members.

Society News.—The second Pan-Russian Congress of Microbiology was held at Moscow, December 27-30; among the subjects discussed was the dissociation and cycle of development of micro-organisms, particularly of the typho-intestinal group and pseudotubercle bacilli and the nature of toxin and anatoxin.——At a meeting in London representing every branch of the study and practice of physical methods of treatment, Nov. 14, 1930, under the chairmanship of Sir Leonard Hill, a society was organized which will be known as the Society of Physical Medicine.——The thirteenth International Medical Postgraduate Course of Karlsbad, with especial consideration of balneology and balneotherapy, will be held, Sept. 13-19, 1931.——At the annual meeting of the Royal College of Physicians of Edinburgh, December 4, Sir Norman Walker was reelected president for the ensuing year.——Sir Frederick Gowland Hopkins, winner in conjunction with the late Prof. Christiaan Eijkman of the 1929 Nobel prize in medicine, was elected president of the Royal Society of Medicine of Great Britain, December 1.

Deaths in Other Countries

Ernst Fuchs, Vienna, well known for his "Lehrbuch für Augenheilkunde," November 21, of angina pectoris, aged 78.——**Fritz Pregl,** winner of the Nobel Prize in chemistry in 1923, at Vienna, December 13, aged 61, of pleurisy. He was awarded the Nobel Prize for the development of an antiseptic solution which bears his name.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 13, 1930.

Is the Cost of Radium Justified? The Secret of the Chinkolobwe Mine

The *Daily Herald*, the organ of the labor party, recently sent Dr. Haden Guest, a physician and socialist member of parliament, to the Belgian Congo "to probe the secrecy and mystery that surrounded the Chinkolobwe Mine—the richest radium deposit in the world." Dr. Guest asks, "Is the fabulous price of radium, $50,000 a gram, justified? Is it the result of curtailing supplies in the face of an ever growing demand of the civilized world?" Shortly after its discovery by Madame Curie, radium could be bought for $2,500 a gram. In 1910, small quantities were obtained from ore deposits at Joachimstal in Bohemia and four years later carnotite deposits in the United States yielded radium, which was sold at $120,000 a gram. From 200 to 400 tons of rock had to be crushed to yield a single gram of radium. Then in 1915 came the discovery in the Katanga district of the Belgian Congo of a source which so surpassed all others that today its proprietors, the Union Minière du Haut Katanga, control the radium supplies of the world. The ores found at Chinkolobwe are chiefly pitchblende and its derivatives and have a high radium content. Only an average of 10 tons is required to produce a gram of radium, against the 400 tons of the carnotite deposits of the United States. Moreover, the process of extraction of radium at the Union Minière's plant at Antwerp is an improvement on the earlier process. Dr. Guest therefore thinks that there should be a much greater reduction on the American price, as the present price does not appear to be in relation to the cost of production. The union refuses to allow visitors to the mine, which is surrounded with barbed wire. What is the secret? It can only be that the union wants to conceal the richness of the mine and the method of working—or not working. In view of the circumstances, Dr. Guest decided not to ask for any permit but to make a surprise visit and trust to luck. He hired a rattletrap self-drive delivery van full of defects and with his wife set off on a road going through a forest, placarded with notices: "Access to the Chinkolobwe mine is forbidden." The road led to a barbed-wire fence with an opening for lorries. Beyond was a gaping quarry. He parked his van and inquired for the manager, who was down in the mine. So he looked around for himself. There was no bustle, no stir of machinery. The ore was hauled up from the bottom of the quarry in trucks on a cable tramway. The place had every appearance of being run on an astounding minimum of expenditure. The manager then arrived and demanded Dr. Guest's permit and was surprised and disturbed that he had penetrated so far without one. He refused to allow the doctor to visit the galleries of the mine and would not answer a single question. One picture remained in Dr. Guest's mind—natives sorting great lumps of yellow and gray-brown ores, rich in radium, and using no more apparatus than a sieve and large shovels. The cost of labor must be small—not more than $5 a week per man. The cost of raising the ore to the surface is 75 cents a ton, by lorry to the railway less than a dollar a ton. It is then sent to the coast by rail with large quantities of unrefined copper. Even if the cost were $250 a ton it would be small in comparison with the price of the contained radium. Is it conceivable that the subsequent process of crushing and crystallization costs anything like $2,500 a ton? Even so that would leave a profit of $22,500 on every gram of radium. During 1929 the union stated that it produced 60 Gm. of radium—at present prices of a value of $3,000,000. The staff employed in the Congo—technical experts, chemists and workmen—is small. A check on the manufacturing costs is furnished by the fact that radium was recently produced in Great Britain from imported ores of inferior radium content at a cost yielding a profit if sold for $25,000 a gram. Dr. Guest thinks that, because of the value of radium in the treatment of cancer, the world has a right to demand that the union should abandon its secrecy and publish figures of costs. As the matter affects all nations, he suggests that the matter should be referred to the one body that can claim to speak for them—the League of Nations.

Tercentenary of the Discovery of Cinchona

The tercentenary of the discovery of cinchona has been celebrated in an elaborate manner at the Welcome Historical Medical Museum. The opening ceremony was international. Cardinal Bourne presided and said that he thought that all would recognize a certain fitness in his occupancy of the chair in that the discovery was due, indirectly at any rate, to the missionary efforts of the Catholic church. The Spanish ambassador claimed for Spain not merely the diffusion of the discovery among civilized peoples but the earlier stages of the study of the tree. The actual discovery was due to a Jesuit missionary, who was cured of malarial fever at Malacastos in the province of Loja. Surprised by the wonderful properties of the bark, he made it known among the Spanish settlers until it was brought to the notice of the governor of Peru and cured his wife, the countess of Chinchon, after whom Linnaeus named the tree cinchona. The French ambassador spoke of the part France played in making known the virtues of the bark. The Peruvian minister said that all the European nations played an important part in the history of Peruvian bark. Spain discovered it; Italy contributed to its diffusion and reputation; France popularized it; Great Britain and the Netherlands made it cheaper and more accessible to mankind. In the museum were assembled the most comprehensive collection of specimens of cinchona and of objects connected with the history of quinine ever brought together. The king of Spain had lent specimens of the bark brought from Peru by Ruiz and Pavon in 1777 and of the leather-cased "serons" (both for mule packs and for human beings) in which it was carried. The Spanish ambassador, the consul generals of Ecuador, Bolivia and Peru, the India Office, the Imperial Institute, the Royal Society, the Linnaean Society, the Medical Research Council, the Royal Geographical Council, the Society of Apothecaries, the Pharmaceutical Society and the Royal Botanic Society and learned bodies from all parts of Europe made loans of interest.

Sir Gowland Hopkins

Sir Gowland Hopkins, F.R.S., professor of biochemistry in the University of Cambridge, discoverer of accessory food substances afterward termed vitamins by Funk, has received two signal honors. Over a year ago he was awarded the Nobel prize at the same time as another great pioneer in scientific dietetics, Professor Eijkman, to whose work tribute was recently paid (THE JOURNAL, Nov. 29, 1930, 1673) on the occasion of his death. Professor Hopkins has now attained the highest scientific appointment possible in England: the presidency of the Royal Society. Since 1663 there have been forty-two presidents, of whom seven have been members of the medical profession.

The Problem of Mental Deficiency

The prevention of the propagation of mental deficiency continues to exercise both the profession and the public. At a conference on mental welfare it was stated by Dr. E. O. Lewis, an inspector of the board of control (of lunacy administration) that nearly 9,000 imbeciles are attending day schools. It is estimated that there are 80,000 mental defectives under various forms of care and control. Dr. A. F. Tredgold, our leading authority on mental deficiency, said that the public had been given to understand that mental deficiency could be eliminated by sterilization, or at all events enormously reduced. But it

could prevent only the birth of defectives from defective parents. From many years' experience his impression was that the proportion of these was only 5 per cent. In the present state of knowledge there were certain definite difficulties and risks in sterilization and in view of the negligible amount of benefits we were not justified in running the risks. Dr. H. B. Brackenbury, chairman of the council of the British Medical Association, said that the latest results of placing defectives in suitable environment, outside colonies and institutions, under supervision and proper conditions, proved that, when in the community, they behaved both socially and sexually in at least as decent a manner as the rest of the population.

PARIS

(From Our Regular Correspondent)

Dec. 3, 1930.

Official Report on the Epidemic of Poliomyelitis in Alsace

The special commission sent by the minister of public health, last July, to study the march and the causes of the epidemic of poliomyelitis that had broken out in lower Alsace has published its report, which was drawn up by Messieurs Levaditi, E. Schmutz and L. Willemin. The report contains many facts but, in reality, raises more questions than it solves. The investigation was confined to the department of Bas-Rhin, or the region of Strasbourg and its environs. The epidemic extended beyond this region but preserved the same character, and the statements of the report are applicable to the outlying districts as well. In the department of Bas-Rhin 405 cases developed, with a mortality of 10 per cent. Age played an important part in the epidemic, since 84 per cent of the cases appeared in children under 6 years of age, 11 per cent in children between 6 and 14, and 5 per cent in persons more than 14 years old. But the percentage of grave cases followed an inverse ratio. The mortality in children under 6 years of age was 7.5 per cent, in children from 6 to 12 years old, 16 per cent, and in persons more than 16 years of age, 20 per cent. Five cases were observed in persons more than 21 years of age. The mode of propagation of the epidemic could not be ascertained. It was noted that in certain families a single child would sometimes come down with the disease, whereas his brothers and sisters, who remained in intimate contact with him, without any precautions being taken, did not contract the infection. It is evident, therefore, that the susceptibility to the virus differs greatly among different subjects. The report recognizes absolutely that such a susceptibility exists, that it diminishes with age, and that there are subjects who have a strong natural resistance, among whom there are no doubt many germ carriers. According to Levaditi and to Kling, subjects who are resistant have virucidal antibodies in their blood. Researches were carried on in the Service de clinique infantile of Professor Rohmer in Strasbourg on the susceptibility of the various blood groups. Group A supplied 56 per cent of the cases, group B, 14.5 per cent, and group AB not a single case. Group AB, therefore, is evidently refractory and group A is particularly susceptible. The first cases of poliomyelitis in Alsace appeared sporadically at various points in the department, far removed from one another, and no relation could be discovered between them. Villages adjacent to other villages with cases of the infection often remained exempt in spite of the probability of frequent relations between their respective inhabitants. Certain areas were exempt, although no reasons for such regional immunity could be discovered. The epidemic as it spread conferred a refractory state on the region previously infected. Poliomyelitis rarely turns back on its course. The epidemic was frankly influenced by certain climatic conditions: elevations of temperature in the surrounding region, dryness of the air and lowering of the level of the subterranean waters, weather phenomena preceded by a period of cold, an increase of the hygrometric condition of the air, and an elevation of the level of the subterranean waters. Whenever an inquiry could be successfully followed up, it revealed the possibility of a transmission of virus through interhuman contact (patients and subjects who were suspected germ carriers). In no instance was strong evidence found in support of the theory of the propagation of the disease through the intermediation of drinking water or food products. The report considers the two theories hitherto advanced in explanation of the transmission of poliomyelitis; namely, the transmission by interhuman contact (Winckelmann) and transmission by water (Kling). Certain facts may be adduced in support of and in opposition to both theories. There were regions that remained absolutely exempt in spite of constant communications with infected areas. In certain barracks at Wissembourg, in which many poor families had found shelter and were living under entirely unsatisfactory hygienic conditions, only one outspoken case of infantile paralysis and a few abortive types developed among the children of all ages numbering about a hundred. Nevertheless, in this particular case, the factor of interhuman contact must have been given full play. Some other factor must intervene, and it must be sought in particular local conditions, either meteorological or geological. Poliomyelitis prefers habitations located in regions of low level: on the banks of rivers and small streams, near the border of woods, and places that are usually damp, with many canals, backwaters and mosquitoes. If the influence of the latter is excluded, and experimentation has shown them to be ineffective from the point of view of transmission, one is logically forced to assume that certain local conditions connected with the soil, and associated with meteorological influences, facilitate interhuman propagation of poliomyelitis. As a whole, the observations of the commission support the theory of the propagation of poliomyelitis through interhuman contact but declare that such contact does not suffice in itself. Other factors of a geographic, geological, hydrographic and meteorological character come into play and constitute a complex of influences that must be taken account of in the future. The transmission through water is not, however, to be disavowed. There is nothing to prevent one from assuming that some water-borne organism, serving as a host for the virus, might carry the latter down to rivers. In addition, one will recall the experimental results that were previously reported by Kling, Levaditi and Lépine, which demonstrated the possibility of transmitting poliomyelitis to monkeys (*Macacus*) by administering the virus by way of the digestive tract, and also the prolonged conservation of the micro-organism in drinking water. The commission is far from inclined to reject the theory of the water-borne character of the transmission of infantile paralysis. Furthermore, the provocative virus of the epidemic of poliomyelitis in the department of Bas-Rhin, isolated by the inoculation of monkeys with human bone-marrow, was found to possess average virulence. It was found, however, impossible to maintain these strains by means of regular passages through animals. Propagation was arrested usually with the first but sometimes with the second inoculation. The virus of poliomyelitis was recovered from the tonsil of a child that had been ill five days. It appears to disappear later from that organ. On the other hand, the commission was surprised to find how rarely the poliomyelitic virus could be discovered in the secretions of the nose and the pharynx and in the feces, results quite different from those recorded in Sweden by Kling, Petterson and Wernstedt and by Kling and Levaditi. In reality, the virus of poliomyelitis might well be expected to be found in the nose, the throat or the intestinal contents more frequently than the experiments undertaken at Strasbourg would indicate. But the susceptibility of monkeys employed in the experiments was found to be extremely irregular, and small quantities of the virus might have escaped the attention of the investigators. It was impossible, on the other hand, to discover the filtrable virus of poliomyelitis outside the human organism. Examinations

of drinking water were constantly negative. It was also well established that biting insects, and more particularly mosquitoes, play no part in the epidemic propagation of poliomyelitis.

Transformation of Bacillus Coli in Polluted Drinking Water

The frequency of disorders due to *Bacillus coli* necessitates today researches for that organism in water destined for human consumption. Some drinking waters may contain from 2 to 3 million bacilli per liter. But it often happens that the same waters, after a few days, do not contain a single bacillus, owing to the effects of a kind of autopurification. In this connection, Fernand Arloing and Dufour of Lyons have discovered an important fact for urban hygiene. If to the water that appears to have become purified of *Bacillus coli* one adds a trace of nutritive matter duly sterilized (filtered sewer water, liquid from a privy vault), one observes *Bacillus coli* reappear, with its ordinary biologic characters. It therefore appears that, when deprived of their nutritive elements, they become transformed and are no longer detectable by means of the microscope or by cultivation; that is to say, they pass into the state of a filtrable virus. Hence, the sources of error in the bacteriologic analysis of water; and it should be borne in mind that it is possible that other intestinal micro-organisms are capable of the same transformation.

BERLIN

(From Our Regular Correspondent)

Dec. 8, 1930.

Mercury in Foods

About four years ago, Prof. A. Stock, then a chemist in Berlin but now professor at the Technische Hochschule in Karlsruhe, attracted wide attention by the statement that minute quantities of mercury (0.001 mg. or even much less) may cause damage to health—usually of a nervous nature. Particular anxiety was awakened by the assertion that ordinary amalgam fillings in teeth are constantly giving off such minute but injurious quantities of mercury. The truth of this assertion was much doubted at first but later was confirmed by a number of investigators. However, at a recent meeting of the Berliner Gesellschaft für öffentliche Gesundheitspflege, Dr. Borinski, director of the Chemisches Institut at the chief bureau of health in Berlin, reported research, extending over years, that had been carried out by the mercury investigation center established at the institute. This research showed that it is true that many persons eliminate mercury and that they must also absorb it. It was discovered, however, not only that mercury is to be found in persons who have amalgam fillings or have other contacts with mercury but also that it is found in persons who have never had an amalgam filling and who have had no other contacts with mercury. Even in infants and the new-born the presence of mercury could be demonstrated. The search for the source of this unexplainable occurrence of mercury led to the discovery that nearly all food contains mercury, and, furthermore, in quantities that correspond to the amounts found in the eliminations. But these small quantities of mercury derived from food are not injurious to health. Only such quantities can produce an injurious effect that exceed the ascertained normal amount. Likewise, the amount of mercury found in the eliminations of persons with amalgam fillings falls usually within the normal limits, so that it is to be assumed that the metal in the eliminations is not derived from the fillings but rather from the articles of diet. These discoveries reduce to a small number those who may be regarded as menaced by mercury elimination. This serves to calm the feelings of those who, on the basis of the first pronouncements on the subject, feared that their health was being undermined by the presence of injurious amounts of mercury in their organism.

Surgery of the Mediastinum

Addressing the Berliner Gesellschaft für Chirurgie recently, Professor Sauerbruch, director of the Chirurgische Klinik, discussed surgery of the mediastinum on the basis of his extensive personal experience. The difficulties associated with surgical interventions on the mediastinum are caused by the peculiar anatomic and physiologic conditions; the large number of lymph vessels and lymph spaces; the copious blood supply of the mediastinum, owing to the presence of the large blood vessels, and the many nerves of the sympathetic and parasympathetic systems. Among the dangers two stand out: the reflex that emanates from the aforementioned nervous systems, and the danger of air embolism, which, to be sure, may be overcome, to a great extent, by the application of the differential pressure procedure. Acute inflammations of the mediastinum that arise through the spread of inflammations from the adjacent organs, by way of metastasis or after general infectious diseases, offer a grave prognosis. Only surgical intervention will aid, but the diagnosis is often exceedingly difficult, since the local manifestations are obscured by the severe general symptoms. Opening of the anterior mediastinum through resection of the sternum is usually too severe an operation for patients in this grave condition. Sauerbruch has, however, often employed with success multiple trephination of the sternum, whereby the pus is drawn off and a number of patients are saved. Possibly even more serious is the prognosis of inflammations of the posterior mediastinum, such as arise after perforation of the esophagus or similar disorders. In such cases a paravertebral intervention and pushing aside the pleura following rib resection, whereby entrance to the mediastinum is obtained, may be considered. With the aid of roentgen rays it is easy to determine whether there is a tumor of the mediastinum. But neither roentgen rays nor clinical observation will reveal the nature of the tumor. The correct diagnosis of the kind of tumor is, however, exceedingly important in deciding what therapeutic procedures to employ. Not only a differential diagnosis between benign and malignant tumors is needed but also recognition of the kind of malignant tumor (if it is malignant), in order to establish the indications for ray treatment. To combat the effects of the contraction of the pleural space by the growing tumor, mediastinotomy has proved successful; that is, the splitting of the sternum and the insertion of a block between the split portions. The operation gives the patient immediate relief and constitutes a relatively slight intervention. After splitting of the sternum, a portion of the tumor may be excised for microscopic examination. As a rule, this operation turns out well and has the desired effect. Respiration is thereby facilitated and irradiation can now be employed with a better chance of success. But also benign tumors are a menace to life. As a result of a slight shifting of the tumor on exertion, undue pressure may be exerted on the right side of the heart, thus causing acute cardiac paralysis. Among the benign tumors, goiters are the most common, in which connection Sauerbruch has not substernal goiters in mind, which can usually be removed by the ordinary cervical incision through luxation of the retrosternal portion of the goiter, sometimes with the aid of a partial resection of the uppermost margin of the sternum, but rather retrosternal goiters, which are not connected with the thyroid. The second most important benign tumors are the dermoid cysts, which, according to present-day ideas of technic, should be extirpated in the same manner as a tumor. The extirpation, to be sure, is not always so easy, since there are often adhesions with the blood vessels, which may cause severe hemorrhages. Then, there are lipomas, fibromas, enchondromas and chondromas, which should likewise be extirpated in toto. The mediastinal cysts form a special group. Their diagnosis may present difficulties, as they often cannot be distinguished roentgenologically (even after examination) from an empyema. They often contain pus, so that

pus is found at the puncture test. Thus, it may happen that such a cyst is operated on as an empyema but does not heal. It may even happen that thoracoplasty is contemplated in order to eliminate the supposed residual cavity. One finds, however, that the walls of such cysts are lined with columnar or ciliated epithelium, which distinguishes them from empyemas. Diverticula of the trachea or of the bronchi, or congenital bronchiectasis, which arises through prevention of the expansion of the lungs in their embryologic development, may be involved. These cyst formations must be known and recognized. They can be completely extirpated. The ganglioneuromas form another group of mediastinal tumors. The first tumor of the kind that Sauerbruch encountered was operated on under the false diagnosis of tuberculosis. The speaker has removed four such tumors and other surgeons have removed three, with no fatalities. Aneurysms of the aorta belong to the mediastinal tumors. Splitting of the sternum will afford great relief in this condition as well—often for many years to come.

A Monument to Roentgen

On November 30, a monument to Professor Roentgen was unveiled in Remscheid-Lennep (Rhineland), the birthplace of Wilhelm Conrad Roentgen, which is the third to be erected in honor of that great scientist. There is a monument in Berlin and another in Leningrad. The new monument represents a symbolic figure, a genius of light, in bronze, bearing a torch in the right hand, over which the left hand is held protectingly. In connection with the unveiling ceremonies several addresses were delivered, which dealt with Roentgen's importance in relation to his personal character and his scientific activities.

ITALY

(From Our Regular Correspondent)

Nov. 15, 1930.

The Pernicious Types of Malaria

Prof. Ettore Marchiafava, senator, delivered recently in Rome, at the Scuola superiore di malariologia, a lecture on the pernicious aspects of malaria. The plurality of the parasites in the various types of malaria is now universally admitted. The various pernicious types, however, constitute a pathologic entity of unique etiology, represented by *Plasmodium falciparum*. The red corpuscles invaded by this parasite shrivel; it is possibly the modification in their physicochemical quality that is the cause of the important fact that the multiplication of the plasmodium occurs in the smallest vessels of the internal organs. That results sometimes in the blocking of the brain, which leads to progressive and retrogressive secondary changes. The gametes of *Plasmodium falciparum* assume the crescent form, develop in the bone marrow, and a few days after the onset of the disease are found in the peripheral blood. Prompt and well executed treatment prevents the formation and the appearance of gametes in the blood, and that has social importance, since the gametes effect the multiplication of the parasites in the body of the mosquito, which, in turn, infects healthy persons. Plasmochin, which is a synthetic preparation of quinoline, has a specific action against the current forms, which are however resistant to quinine. Much was said about the efficacy of plasmochin at the recent International Congress on Malaria, held in Algiers.

The clinical course of estivo-autumnal fevers since 1881 was studied by the speaker, in collaboration with Professor Bignami. In the curve of this malarial form, called also malignant tertian, five phases are distinguished; namely, the onset of the fever, the static period, the pseudocrisis, the elevation preceding the crisis, the crisis. Malignant tertian may assume a pernicious character. There are two principal types of perniciousness; namely, the solitary and the associated types. By the solitary types is meant those in which the gravity of the infection is caused by the progressive aggravation of all the symptoms that accompany the morbid type. The associated types, on the other hand, are dominated by a symptom that characterizes them and from which they derive their name; thus, one may distinguish the delirious form, the meningitic form, the bulbar form, and others. In Italy the pernicious types never appear in the spring but from July to November. The prophylaxis of the pernicious type lies in the prompt and energetic treatment of estivo-autumnal malaria.

Diseases That Incapacitate for Military Service

The revised list of defects and diseases that affect the physical qualification for military service has been published. The list is accompanied by an explanation of the minister of war to the effect that, in the elaboration of the list, account was taken not only of the newer scientific knowledge that has been acquired since the previous list was published but also of the experience gained during the war in the fields of practical application, sanitary consequences and administrative deductions. The lists of diseases that were approved at the time were based on the organization of the army at that period, but the work has had to be revised by reason of slight changes and additions that only the protracted application of the stabilized norms can bring to the fore.

The principal cause of incapacity is deficiency of stature, the minimum being fixed at 1.5 meters, or 59 inches. It is within the province of the minister of war to exempt those who do not exceed 1.54 meters in height (60½ inches). Great importance is attached to the relation between height and chest girth. In the new list special attention is given to deficiency diseases, such as scurvy and pellagra, and to syndromes due to changes in the functioning of the endocrine glands; for example, exophthalmic goiter. Addison's disease, and the adiposogenital syndrome of Frölich. Any type of tuberculosis, whether pulmonary or extrapulmonary, constitutes incapacity for military service, and likewise manifestations of grave chronic intoxications of exogenic origin, chronic lead poisoning, alcoholism, tobaccoism, or poisoning due to arsenic or mercury.

The Scientific Mission in Eritrea

Mention was made in a previous letter of a scientific mission, of which Prof. Umberto Gabbi, senator, and clinician of the University of Parma, was the head, having gone to the western plains of Eritrea for the purpose of studying the most important problems of human and veterinary pathology in that part of Africa. Professor Gabbi has recently published the chief results of the expedition.

In the field of human pathology, data on the diffusion of malaria were secured; also on the diffusion of syphilis and on its morbigenic influence on the natives. It was discovered that the pathology of the region of Barca is of a typical tropical character. Infections due to protozoa and cutaneous and intestinal diseases predominate, while the so-called cosmopolitan diseases, including tuberculosis, are rare.

The various members composing the mission discovered a new parasite that causes scabies; a peculiar type of *Acarus* (*Tarsonema*) in a subject affected with psoriasis, on which Professors Peruzzi and Alessandrini are at present making researches, and possibly a new trypanosome in the rats of Agordat, which is the subject of special study by Professor Di Domizio.

In the veterinary field, the study of certain trypanosomes occurring in the cattle of Eritrea led to a more exact determination of the pathogenic trypanosomes and to certain therapeutic observations that will be studied further.

In the study of medicinal herbs, a plant with cardiokinetic action equal to digitalis was discovered by Professor Chistoni.

The Lecture of Professor Young

Dr. Hugh H. Young of Baltimore delivered recently at the Accademia Lancasiana in Rome a lecture on "Advantages of

the Perineal Route in Operations on the Prostate," illustrated by numerous projections. After demonstrating the anatomic peculiarities of the region, the technic to produce epidural anesthesia, and the special type of operating table that he used in order to place the patient with the perineum on a horizontal level, Dr. Young showed the operative procedure that he employs in the majority of cases of simple hypertrophy of the prostate. He has used his method in 1,570 cases, with an average mortality under 3 per cent. During his twenty years of practice, the mortality has been gradually reduced, until, for three consecutive years, with 198 operations, there have been no deaths. In about 20 per cent of these interventions the presence of cancerous nodules could be demonstrated. If the cancer has not invaded the seminal vessels, the speaker regards it as operable according to a special technic that he explained. He has operated in twenty-four such cases, with four deaths. In tuberculosis of the genitalia, Dr. Young removes completely the prostate, the seminal vessels, the vas deferens and the testes. He has performed such operations in thirty-five cases with good results. The speaker showed also an apparatus for the gradual reduction of intravesical pressure in cases of high tension, his special type of needle carrier, special forceps, and the peculiar anatomoclinical devices that he employs to facilitate the work and to have always under his vision the anatomopathologic conditions of each patient.

The Prenatal Diagnosis of Sex

Dr. Sodano, of the obstetric-gynecologic institute of the University of Naples, presented recently a communication on the prenatal diagnosis of sex. His research was based on the presumption that if, as one theory sets forth, in the blood of the mother there is in reality during the so-called male pregnancy an immission of a testicular hormone from the sexual gland of the fetus, the presence of such hormone should be revealed by the deviation of complement. The technic employed was that used for the Wassermann test, the antigen being an alcoholic extract of animal testis. The researches were made on women in the ninth month of pregnancy and also on a number of women in the first half of pregnancy. As controls, nonpregnant women and also male subjects were used. The deviation of complement was constant in all cases. Dr. Sodano concludes that, since it is impossible to demonstrate in the blood of a pregnant woman the presence of substances derived from the sexual glands of the fetus, none of the methods based on the presence of such substances can be regarded as adapted for the prenatal diagnosis of sex.

The Death of Professor Gardenghi

The University of Florence has lost by death Prof. Giuseppe Gardenghi, director of its Istituto di igiene. Born at Lugo di Romagna, he graduated at the University of Parma, in medicine and surgery and also in the natural sciences. He became assistant and later associate of Patolo at Parma and obtained the venia legendi in experimental hygiene, and after a few years as instructor at the universities of Rome, Naples and Parma he was called to the chair at the University of Florence, which he occupied until his death. Special importance attaches to his researches on the tidal air and the residual air, in which the importance of the factor of humidity is brought out. Science is indebted to him also for the first research on anaerobic microorganisms found in water, for inquiries on the bactericidal action of light in the various zones of the spectrum, and for experiments on the resistance of tubercle bacilli to acids. His studies on the modifications brought about in the disinfecting potency of solutions of phenol by the addition of neutral salts opened the way to recent applications in the disinfection of tuberculous sputums. Of particular value are also his hydrologic, hydrothermal and hygienic studies on health resorts; also his biologic studies on the value of hot springs in tuberculosis, based on his observation of the phenomenon of the revival of the tuberculous skin reaction under the influence of baths with salts of iodine. Among his works may be mentioned "General Prophylaxis of Infectious Diseases" and "Industrial Hygiene."

Prize Offerings

The Federazione nazionale per la lotta contro la tubercolosi announces in its new periodical entitled *La lotta contro la tubercolosi* two prizes for two monographs, one scientific and the other of a social character, on "Glandulolymphatic Tuberculosis in the Preschool Age, Excluding Infancy," and "Causes of the Diffusion of Tuberculosis in the Rural Districts and the Mode of Preventing It." The prizes amount to 10,000 lire, or $526. The Società d'igiene has awarded a prize to two works on "The Collection, Transportation and Utilization of Garbage in Large Cities" and has opened a competitive prize for an original work on "The Hygiene of Dress."

A Case of Rabies

In 1906 a merchant of Resina (province of Naples) was bitten by a rabid dog. He received promptly suitable treatment in the Istituto antirabico of Naples, and he appeared to have recovered completely and remained in good health for a long period of years. A few days ago he suddenly exhibited symptoms of rabic infection and died in a short time in spite of the careful treatment given him in the hospital. The case is new in the annals of medicine and will be subjected to a special inquiry following the necropsy.

Committee of the Latin Medical Press

Three places on the permanent committee of the Latin medical press have been assigned to Italy and these three men have been appointed: Prof. Ermano Fioretti, deputy, secretary of the Sindicato medico nazionale; Prof. Rocco Jemma, dean of the Facoltà medica of Naples, and Prof. Baldo Rossi, senator, clinical surgeon and president of the University of Turin.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 30, 1930.

Carbohydrate Metabolism and Insufficiency of Hypophysis

Drs. Houssay and Biassotti presented before the International Congress of Biology, recently held at Montevideo, Uruguay, the results of experiments which seemed to prove that the hypophysis is the most important regulating factor of carbohydrate metabolism. Basal metabolism in hypophysioprival dogs is on an average 15 per cent lower than in controls. The administration of meat to eight hypophysioprival dogs and to six controls caused the same dynamic action. Hypophysioprival dogs eliminate 30 per cent less nitrogen per kilogram of body weight than the controls do. They have a normal glycemia. Occasionally they present spontaneous crises of hypoglycemia. If, during the crises, the glycemia drops to 0.7 per thousand, the animals develop convulsions and go into coma. As a rule these crises appear when the animals are fasting, especially if they have received phlorhizin, and may be observed both in dogs deprived only of the hypophysis as well as in hypophysioprival dogs deprived also of the pancreas. If sugar is given to the animals as soon as the crisis appears, it may be arrested in a few minutes. The tolerance to the sugar is the same in hypophysioprival dogs as it is in the controls, as proved by estimations based either on the variations of the glycemic curve or by the changes of the respiratory quotient after the injection of dextrose solutions. Both dogs and toads deprived of the hypophysis are highly sensitive to the action of insulin. The administration of doses of insulin that causes no effect in controls kills hypophysioprival animals. When pancreatectomy is performed in dogs previously deprived of the hypophysis, diabetes of an attenuated form develops, in which condition the animals may live for about six months. In these

animals glycemia varies from 1.13 to 2.75 per thousand. The daily glycosuria per kilogram of body weight is low (from 0.05 to 0.89 Gm.) and it may disappear while the animals are fasting. These animals can retain in their organisms from 30 to 70 per cent of the saccharose given to them by mouth, and sometimes their organisms retain also 100 per cent of dextrose if intravenously administered. In the greater number of cases, the injection of dextrose makes the respiratory quotient rise, which fact cannot be observed in dogs deprived of the pancreas alone. Extensive lesions in the tuber cinereum do not modify the evolution of diabetes.

Medical Congresses in Montevideo

The International Congress of Biology took place, October 8-12, at Montevideo. Delegations representing the medical profession of several countries were constituted as follows: Drs. Embdem and Köhler, Germany; Houssay, Sordelli, Bachmann, Hug and fifty other members of the committee, Argentina; Ozorio de Almeida, Galvao, Pereyra and Cardoso, Brazil; Noé and Rahm, Chile; Martin, Regaud and Achard, France; Pende and Rondoni, Italy; Bonilla and Recasens, Spain; McClung and Durán Reynals, the United States; Urízar, Paraguay; Caminara, Costa Rica, and Varela Fuentes, Peru. The sessions were attended by a great number of both foreign and local biologists and physicians. More than 300 papers dealing with topics such as biology, cytology, morphology, physiology and biochemistry, microbiology and immunology, methodic and didactic teachings, were read. Official speakers included Drs. Rondoni, Houssay, Embdem, Ozorio de Almeida, Estable, Köhler, Varela Fuentes, Hormaeche, McClung, Martin, Boerger, Spangenberg, Rahm, Prunell and Noé. The congress will meet biennially. The next congress will be held at Rio de Janeiro in 1932.

The International Conference of Serotherapy of Syphilis, which was organized by the League of Nations, recently met under the chairmanship of Dr. Jadahson at Montevideo. Scientific determinations were presented by Drs. Kahn, Wyler, Sordelli, Scaltriti and others.

The Medical Congress of Uruguay was held, October 5-12. The meetings took place at the same time as those of the local societies of cancer, of ophthalmology and of otolaryngology. Many local as well as foreign physicians were present at the sessions.

In Honor of Pasteur

On the occasion of the opening of the Pasteur pavilion of the Instituto Bacteriológico of the National Department of Hygiene of Buenos Aires, which pavilion is devoted to studies of plague and mycology, a plaque was unveiled in honor of Pasteur. The president and ministers of the government of Argentina and representatives of the principal medical societies were present. The diplomatic representative of France, and Drs. C. Nicole, G. Araoz Alfaro and Ponce de Leon, made addresses.

Lectures by Foreign Physicians

The following lectures have been recently delivered in Buenos Aires: Putti, Bologna, orthopedics; Nicole, Tunis, the origin and evolution of diseases; McClung, Philadelphia, the progress made on studies of cytology; Embdem, Frankfort, chemical phenomena of the muscular activity; Baur, Berlin, genetics; Köhler, Berlin, topics related with physiology and biology; Regaud, Paris, the biologic action of irradiations and therapy in cancer; Pende, Genoa, constitution in childhood, and pluriglandular diabetes; Rondoni, Milan, metabolism of purines; Bonilla, Madrid, endocrinology; Recasens, Zaragoza, radiotherapy of cancer; Rahm, Santiago, Chile, anabiosis; Achard, Paris, nephrosis, and liver therapy in pernicious anemia; Martin, Paris, diphtheria; Noé, Santiago, Chile, secretion from the thyroid; Silva Araujo, Rio de Janeiro, prophylaxis of venereal diseases, and frambesia.

Marriages

THOMAS JOSEPH ENGLISH, Philadelphia, to Miss Helen Rose Gilmore of Highland Park, Pa., in December, 1930.

JOSEPH HENRY CUTCHIN, Easley, S. C., to Miss Frances Blackman of Spartanburg, Nov. 5, 1930.

JOHN HENRY LINSON to Miss Helen Pauline Satre, both of Chicago, Sept. 13, 1930.

AARON LEIFER to Miss Agatha Inselbuch, both of Brooklyn, in December, 1930.

Deaths

Samuel Theobald, Baltimore; University of Maryland School of Medicine, Baltimore, 1867; member and past president of the Medical and Chirurgical Faculty of Maryland and past president of the American Ophthalmological Society; clinical professor of ophthalmology and otology, 1894-1912, clinical professor of ophthalmology, 1912-1925 and since 1925 emeritus professor of ophthalmology, Johns Hopkins University School of Medicine; ophthalmic surgeon to the Johns Hopkins Hospital, 1889-1925; on the staffs of the Baltimore Eye, Ear and Throat Charity Hospital and the Southern Baltimore General Hospital; author of "Prevalent Diseases of the Eye"; aged 84; died, Dec. 20, 1930, of senility.

Harry McCrindell Johnson ⊕ San Antonio, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1890; clinical professor of genito-urinary surgery, 1903-1914, and associate in surgery, 1910-1914, Washington University School of Medicine, St. Louis; member of the American Association of Genito-Urinary Surgeons, American Urological Association and the American College of Surgeons; formerly on the staffs of the Mullanphy Hospital, Washington University Hospital, Skin and Cancer Hospital, St. John's Hospital and St. Louis Eye, Ear, Nose and Throat Infirmary, St. Louis; aged 63; died recently, of tuberculosis.

Winn Fort Morrow, Kansas City, Mo.; Missouri Medical College, St. Louis, 1878; member of the Missouri State Medical Association; formerly professor of principles and practice of surgery and clinical surgery, University Medical College of Kansas City; at one time member and secretary of the state board of health; aged 76; died, Nov. 29, 1930, of cerebral hemorrhage.

George Balentine Evans ⊕ Dayton, Ohio; Medical College of Ohio, Cincinnati, 1878; in 1915 second vice president of the American Medical Association; past president of the American Proctologic Society; member of the American College of Surgeons; for many years on the staff of St. Elizabeth's Hospital; aged 75; died, Dec. 13, 1930, of angina pectoris.

Clement Remington Bowen ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1910; assistant professor of orthopedics, graduate school of medicine of the University of Pennsylvania; served during the World War; aged 45; on the staff of the Misericordia Hospital, where he died, Dec. 2, 1930, of miliary tuberculosis.

Webster Whitall Belden ⊕ New York; Tulane University of Louisiana School of Medicine, New Orleans, 1916; member of the American Roentgen Ray Society and the Radiological Society of North America; served during the World War; on the staff of the New York Hospital; aged 38; died, Dec. 15, 1930, in New Orleans, of pneumonia.

William M. Robertson, Denver; College of Physicians and Surgeons, Keokuk, Iowa, 1870; College of Physicians and Surgeons, Chicago, 1883; Civil War veteran; formerly state senator, city health commissioner and member of the school board; aged 86; died, Dec. 14, 1930, in the Fitzsimons Hospital, of heart disease and pneumonia.

Winfield Scott Bennett, Patchogue, N. Y.; Medical Department of the University of the City of New York, 1886; member of the Medical Society of the State of New York; past president of the Suffolk County Medical Society; formerly health officer, coroner and member of the school board; aged 79; died, Dec. 4, 1930.

Albert Simmons Briggs, Boston; Boston University School of Medicine, 1902; assistant professor of clinical medicine at his alma mater; on the staff of the Massachusetts Homeopathic

Hospital; aged 58; died, Dec. 13, 1930, in the Massachusetts Memorial Hospital, of mediastinal lymphosarcoma with general metastasis.

George Vane Morse ⊕ Bloomfield, N. J.; New York Homeopathic Medical College and Flower Hospital, 1912; served during the World War; aged 42; on the staffs of the Mountainside and Community hospitals, Montclair, and the Hospital of Essex County, East Orange, where he died, Dec. 12, 1930.

Edward Wyatt Cannady ⊕ East St. Louis, Ill.; Washington University School of Medicine, St. Louis, 1902; president and for many years member of the board of education; on the staff of St. Mary's Hospital and formerly on the staff of the Christian Welfare Hospital; aged 57; died, Dec. 13, 1930.

William Ernest Evans, Rowland, N. C.; Medical College of Virginia, Richmond, 1894; member of the Medical Society of the State of North Carolina; aged 61; died, Dec. 11, 1930, in a hospital at Florence, S. C., of injuries received when the automobile in which he was driving was struck by a train.

Edward Rogers Noyes, Lieut., U. S. Navy, retired, Washington, D. C.; George Washington University Medical School, Washington, 1908; chief pharmacist in the navy; retired in 1929; aged 60; died, Nov. 18, 1930, of lobar pneumonia and heart disease.

Leslie Brown Miller ⊕ Kansas City, Mo.; University Medical College of Kansas City, 1907; formerly professor of pathologic histology and bacteriology at his alma mater; aged 46; was found dead in bed, Dec. 5, 1930, of heart disease.

Henry Spencer Capps, Hazlehurst, Miss.; University of Louisville (Ky.) School of Medicine, 1903; University of Illinois College of Medicine, Chicago, 1904; aged 56; died suddenly, Dec. 1, 1930, in Macon, Ga., of cerebral hemorrhage.

Edward A. Blount ⊕ Dallas, Texas; Columbia University College of Physicians and Surgeons, New York, 1896; formerly lecturer on dermatology, Baylor University College of Medicine; aged 56; died, Dec. 8, 1930, of acute myocarditis.

John Francis Beseler, Chicago; Jenner Medical College, Chicago, 1908; member of the Illinois State Medical Society; aged 51; died, Dec. 24, 1930, of hypostatic pneumonia, acute dilatation of the heart and cerebral hemorrhage.

Marion Coon, Boston; Boston University School of Medicine, 1891; at one time instructor at her alma mater; aged 62; died, Nov. 21, 1930, in the Massachusetts Homeopathic Hospital, as the result of injuries received in an accident.

William Pomp Walker ⊕ Bethlehem, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; member of the American College of Surgeons; on the staff of St. Luke's Hospital; aged 62; died, Dec. 1, 1930.

Allen H. Carr, Princeton, W. Va.; Louisville (Ky.) School of Medicine, 1874; member of the West Virginia State Medical Association; aged 79; died, Nov. 14, 1930, in Welch, of strangulated hernia, myocarditis and arteriosclerosis.

Anne H. McFarland Sharpe, Tallahassee, Fla.; Northwestern University Woman's Medical School, Chicago, 1891; professor of hygiene, Florida State College for Women; aged 62; died, Dec. 13, 1930, of pneumonia.

Schuyler Colfax Beard, Vincennes, Ind.; Bellevue Hospital Medical College, New York, 1885; member of the Indiana State Medical Association; formerly county coroner; aged 66; died suddenly, Dec. 13, 1930, of heart disease.

William Louis Becker, Dubuque, Iowa; Northwestern University Medical School, Chicago, 1900; member of the school board; on the staff of St. Joseph's Hospital; aged 58; died, Nov. 20, 1930, of cerebral hemorrhage.

Theodore Bratrud ⊕ Warren, Minn.; University of Minnesota College of Medicine and Surgery, 1899; member of the American College of Surgeons; on the staff of the Warren Hospital; aged 56; died, Dec. 6, 1930.

James W. Kelly, Big Stone Gap, Va.; University of Maryland School of Medicine, Baltimore, 1887; member of the Medical Society of Virginia; aged 69; died, Dec. 11, 1930, in a hospital at Norton, of pneumonia.

Charles Boehm, Highland Park, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1895; aged 78; died, Dec. 6, 1930, of chronic myocarditis.

Ferdinand Hammond Turner, Meridianville, Ala.; Birmingham Medical College, 1903; member of the Medical Association of the State of Alabama; aged 49; died, Dec. 12, 1930, of a self inflicted bullet wound.

George Washington Heuman ⊕ St. Louis; St. Louis University School of Medicine, 1903; member of the American Urological Association; served during the World War; aged 48; died in December, 1930.

James D. Gray ⊕ Yoakum, Texas; Beaumont Hospital Medical College, St. Louis, 1901; member of the American College of Surgeons; on the staff of the Huth Memorial Hospital; aged 59; died, Dec. 5, 1930.

Isaac Copeling Young, McEwen, Tenn.; University of the South Medical Department, Sewanee, 1897; member of the Kentucky State Medical Association; aged 56; died, Nov. 21, 1930, in Duquoin, Ill.

Roscoe L. White, Memphis, Tenn.; Memphis Hospital Medical College, 1895; aged 59; on the staff of the Shelby County Hospital, where he died, Dec. 2, 1930, of chronic interstitial nephritis.

George Allan Love, Preston, Minn.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1874; formerly mayor of Preston; member of the county board of health; aged 79; died, Dec. 4, 1930.

Par Gustaf Richard Hogner, Stockholm, Sweden; Kungl. Karolinska Mediko-Kirurgiska Institutet, Stockholm, 1879; member of the Massachusetts Medical Society; aged 78; died, Oct. 13, 1930.

William H. Nammack, Far Rockaway, N. Y.; Bellevue Hospital Medical College, New York, 1886; aged 68; died, Dec. 19, 1930, of skull fracture and intracranial hemorrhage, due to a fall.

Ralph Eugene Holmes, Leesburg, Ohio (licensed, Ohio, 1896); member of the Ohio State Medical Association; aged 76; died, Dec. 7, 1930, of cirrhosis of the liver and chronic endocarditis.

Silas Palmer Beebe, New York; Cornell University Medical College, 1909; formerly professor of experimental therapeutics at his alma mater; aged 54; died, Dec. 6, 1930, of pneumonia.

Jacob Fletcher Somers, Crisfield, Md.; University of Maryland School of Medicine, Baltimore, 1885; aged 71; died, in October, 1930, of chronic myocarditis and acute dilatation of the heart.

George Heber Gates, Milwaukee; Hahnemann Medical College and Hospital, Chicago, 1889; aged 65; died, Dec. 14, 1930, of starvation due to stricture at the cardio-esophageal junction.

Anna E. Wolfram, Bellevue, Ky.; Woman's Medical College of Cincinnati, 1895; member of the Kentucky State Medical Association; aged 73; died, Dec. 2, 1930, of pulmonary tuberculosis.

Leo Yearwood Granger, Newark, N. J.; Columbia University College of Physicians and Surgeons, 1918; aged 36; died, Dec. 13, 1930, of pneumonia, empyema and pericarditis.

Benjamin Ernest Witte ⊕ San Antonio, Texas; University of Louisville (Ky.) School of Medicine, 1890; aged 60; died, Nov. 27, 1930, in Santa Rosa Infirmary, of myocarditis.

Quintin David Arner, Allentown, Pa.; Medico-Chirurgical College of Philadelphia, 1898; served during the World War; aged 61; died suddenly, Nov. 27, 1930, of cerebral hemorrhage.

Frank A. Snyder, Lincoln, Neb.; Chicago Medical College, 1881; veteran of the Spanish-American War; aged 72; died, Dec. 6, 1930, as the result of an injury received in a fall.

Samuel F. Sharp, Athena, Ore.; Jefferson Medical College of Philadelphia, 1870; member of the Oregon State Medical Society; aged 83; died, Oct. 28, 1930, of heart disease.

Thomas James Bickley, Birmingham, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1879; aged 75; died, Nov. 24, 1930, in a hospital at Atlanta, Ga.

Frank Rainie, Inglewood, Calif.; University of Michigan Medical School, Ann Arbor, 1889; aged 66; died, Nov. 25, 1930, of coronary thrombosis and arteriosclerosis.

Charles W. Davis, Seattle; Missouri Medical College, St. Louis, 1884; member of the Washington State Medical Association; aged 70; died, Nov. 30, 1930.

Roy Hart Norris, Mount Pleasant, Ala.; Medical Department of the University of Alabama, Mobile, 1897; aged 57; died, Oct. 18, 1930, of chronic pulmonary abscess.

Roy Harris, Quitman, Texas; Baylor University College of Medicine, Dallas, 1917; aged 46; died, Nov. 3, 1930, in Winnsboro, of nephritis.

Paul Curtis, Chagrin Falls, Ohio (licensed, Ohio, 1896); aged 73; died, Nov. 30, 1930, of bronchopneumonia.

Correspondence

STRYCHNINE POISONING IN CHILDREN

To the Editor:—I read with much interest an article in The Journal, November 29, by Dr. Aikman on strychnine poisoning in children. I hope that his suggestions will lead to some change in the formulas of the cathartic pills and tablets now in common use. However, I take issue to one statement in that article: "If pills and tablets containing strychnine were uncoated the resulting unpleasant taste would prevent serious accidental poisoning in children." It is well known that many children under 2 years of age show complete disregard of the taste of things that they put in their mouths.

I knew one child to macerate several Aiken tonic pills in her mouth with fatal result, and with that black bitter mass in her mouth to reach for more pills. Two other children barely recovered after eating uncoated tablets containing aloes and strychnine. I recall another fatality that resulted from a child eating uncoated quinine tablets.

I think that most physicians who practiced medicine when kerosene was largely used for lighting homes have seen many cases of serious poisoning in children who drank kerosene with absolute disregard of taste or smell.

A. J. Roberts, M.D., Jackson, Mich.

THE COFFEY-HUMBER PATENT NUMBER 1771976

To the Editor:—Dr. Coffey has repeatedly stated in the public press that he and Dr. Humber make no claim for a cure, yet in the United States patent number 1771976, signed by Walter B. Coffey and John D. Humber, there is the following opening statement: "Our invention relates to a therapeutic substance having the property of stabilizing tissue growth and which, by virtue of this property, is capable of controlling and/or destroying carcinoma, sarcoma and other malignancies." Obviously these two statements are contradictory.

This patent claims that the Coffey-Humber extract is an adrenal cortex extract, stabilizing growth, and that it controls or destroys cancer. These claims may be easily proved untrue. First, there is no possibility of this water and alcohol cortex extract being an effective hormonal extract, as this method of preparation cannot produce an adrenal cortex extract which can substitute for the cortical hormone in adrenalectomized animals. An effective cortical extract, such as the extracts produced by Hartman, Swingle and Pfiffner, requires fat solvent extraction. Coffey and Humber claim their extract to be an adrenal cortex extract but this is really not so because it cannot substitute for the cortical hormone.

Itami and I (*Science* **72**:460 [Oct. 31] 1930) have proved that an effective adrenal cortex extract, such as that of Swingle and Pfiffner, is effectual neither in stabilizing growth nor in influencing the course of cancer in animals. We also made tissue culture experiments which showed no stabilization of growth.

This patent can be contradicted on the statements that it is not a stabilizer of growth nor an adrenal cortex extract, and time unfortunately is telling us that it is not "capable of controlling and/or destroying carcinoma, sarcoma and other malignancies." How such a patent was ever allowed by the United States Patent Office is a matter of astonishment. It is a very dangerous precedent, if such casual pseudoscientific unproved claims in regard to so-called cancer cures are allowed by the Patent Office.

This Coffey-Humber treatment has an element of danger because Dr. Coffey states that x-rays and radium treatment interfere with his treatment. Radiation plus surgery under good auspices will cure 36.5 per cent of all cancers as they come to the clinic, and Drs. Coffey and Humber have said that they have treated several thousand cases by this treatment, and that these cases were advanced or so-called hopeless cases. Of this type of case, our experience is that about 10 per cent may be saved by surgery, x-rays and radium treatment, which they are said not to have had in the Coffey-Humber treatment. The softening of the tumors claimed by Drs. Coffey and Humber is familiar to cancer research workers, as the results of foreign protein and also occurs in the lead treatment.

United States patent number 1771976 is well worthy of perusal and may be obtained from the Patent Office on payment of 20 cents. How any medical man could advise the Coffey-Humber treatment after reading this patent staggers my imagination.

Ellice McDonald, M.D., Philadelphia.
Director of Cancer Research, University of Pennsylvania Graduate School of Medicine.

PRIORITY IN METHOD OF TREATING BROMIDE INTOXICATION

To the Editor:—Referring to Weidman's note on Priority in Treatment of Bromide Intoxication (The Journal, October 25, p. 1281), Dr. Herman Goldenberg stated (The Journal, November 29, p. 1689) that, though he used the salt treatment of the latter condition before Harris and Hauser and Wile and his co-workers, he does not know who was the originator of this method.

In an article published in the *Neurologisches Centralblatt* (**29**:74, 1910), Ulrich, inspired, as he states, by the experiments of von Wyss, successfully treated bromide intoxication with sodium chloride. Internal doses were from 2 to 3 Gm. three times daily, while the dermatoses, acne and ulcers, yielded to applications of a 10 per cent sodium chloride solution in the form of moist dressings, and 1 per cent solution used as a mouth wash relieved the fetid odor.

George B. Hassin, M.D., Chicago.

"ALLERGY AND THE ACID BASE BALANCE"

To the Editor:—I have read with interest the article by Dr. Beckman on "Allergy and the Acid-Base Balance" (The Journal, November 22). My fairly extensive experience, especially in the Great Lakes basin and to a lesser extent in Colorado, has borne out some of his observations.

However, one statement bears questioning: "That nearly all allergic persons are free from attacks at altitudes of 4,000 feet or more is an established fact, usually explained by the relative freedom of the air from offending pollens; but how shall one explain the equal degree of relief obtained by individuals whose malady is not pollen caused . . . ?"

The local altitude is 4,600 feet, and numerous patients are seen from districts to altitudes of which are as high as 8,000 feet and over.

With respect to hay-fever, it may interest the author of the article in question to know that Russian thistle and several lesser offenders cause sensitivity as frequently here, apparently, as the ragweed group in the Great Lakes basin. Furthermore, six years ago, while spending some time at an altitude of 5,600 feet, in Utah, I found Russian thistle to be a common factor in the causation of hay-fever. It is true that sufferers from Russian thistle hay-fever are free when at an altitude of about 7,000 feet, since the weed does not grow above that altitude.

However, the nonpollen type of sensitization is found, in my experience, to occur in persons living constantly at or above an altitude of 8,000 feet. Certainly the sensitization problems occur as frequently in the local region of 4,600 to 5,000 feet altitude as in the Middle West.

The management of the sensitive patient in asthma, hay-fever and urticaria in the higher altitudes is the same as in the Great Lakes region, from the standpoint of testing, specific and non-specific treatment, and the elimination of the sensitizing agent.

The freedom from symptoms which some patients experience on coming to Colorado from the Middle West is merely due to change of environment. Patients may become asymptomatic at higher altitudes by change of environment rather than elevation as occurs at lower altitudes.

R. H. KAMPMEIER, M.D., Pueblo, Colo.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

RELIEF OF HEAT CRAMPS

To the Editor:—I am attaching a letter which refers to the use of dextrose on the one hand and sodium chloride tablets on the other in the treatment and prevention of heat cramps. As the apparent success of this treatment would prove to be far-reaching from the industrial point of view, I take the liberty of asking you: What really is the reason for the relief of cramps by either dextrose or table salt? Which of the two would prove the more efficient from the standpoint of time necessary to secure relief? What dangers might there be lurking in the use of either one of these measures in the face of the fact that an average worker, exposed to extreme heat, drinks water from eight to fifteen times a day—thus implying the possibility of taking either salt or dextrose that many times a day? N. I. A.

ANSWER.—It is probable that muscle cramps and kindred conditions related to thermic abnormalities may not all be placed in one category. The most serious form is that incident to excessive sweating and an undue loss of fluid and salines from the body. This is best known as "stokers' cramps" but may be found under any condition associated with high temperatures and excessive sweating. A second type is found under conditions of high temperatures and high humidity, resulting in the retention of waste products within the body, leading to a mild toxemia and contributing to fatigue. A third type is localized in the abdomen and results from the ingestion of highly chilled water. This form involves the local dysfunction of the autonomic nervous system in that region and frequently leads to gastro-intestinal upsets.

It is believable that dextrose may serve a useful purpose in the second type of the condition, acting to relieve the toxemia in a manner akin to its useful action in the toxemias, such as the toxemia of pregnancy. It is not maintained that dextrose serves no useful purpose in other forms, but so little is known as to warrant no opinion at the present time. The third type is obviously avoided by consideration for the proper temperatures of drinking water which should be in a range from 48 to 52 F.

Greater emphasis is to be placed on the first type mentioned, "stokers' cramps," because of its severity and frequency. It is not unusual for workers to excrete as much as 15 pounds (7 Kg.) of water a day, under conditions of hard work, high temperature and relatively low humidity.

Not less than 98 per cent of perspiration is water. The 2 per cent of solids (approximate) embrace sodium and potassium chloride (there being nine times as much of the former as of the latter), fats, urea and volatile fatty acids. During hard muscular work, with or without high temperatures, accompanied by free sweating, the kidneys, which retain inorganic salts, are ordinarily out of action. Edsall, as early as 1904, found in these heat cramp cases an enormous nitrogen output in the urine with an apparent complete retention of chlorides, so far as they were present in the urine.

After loss of salts by free sweating, water intake in abundance causes an acute rise in diffusion pressure, leading to attacks of cramps. Prolonged sweating increases the concentration of the chloride radical in the sweat. Sweating leads to a decreased percentage of the chloride radical in the whole blood. Intake of water during sweating increases the excretion of water and minerals.

It is reasonable to accept the dehydration plus the desalinization of the blood and tissues as responsible for the muscle cramps. Prevention and treatment is well served by the intake of dilute saline solution for compensation purposes. It is undesirable that tablets of salts be taken into the body as such. The local action of a highly concentrated salt solution is undesirable. It is better that all the water supply be treated with salts, or that there be two types of water available to workmen. Under experimental conditions a 1 per cent saline solution has proved to yield the best results. For the long continued practical use of saline solution, a weaker solution of from 0.3 to 0.5 per cent may prove to be of greater efficacy.

It is not known that any harmful results will develop in normal persons engaged in hard work and given to excessive sweating. Persons with impaired renal systems and not given to profuse sweating will probably not profit by this form of industrial prophylaxis. For the treatment of these cases, a 1 per cent saline solution may be used. Saline water, if chilled, is quite palatable.

CARDIAC SYPHILIS

To the Editor:—A man, aged 50, has aortic regurgitation with cardiac hypertrophy. Angina at times has been so frequent as to necessitate taking fifty or more one-hundredth grain (0.6 mg.) glyceryl trinitrate tablets daily for unusually bad days. The Wassermann reaction has been 4+ several times. Last year he was treated at a reputable clinic in Manhattan for jaundice (syphilitic hepatitis) and syphilitic aortitis. At present the patient shows marked dyspnea on the slightest exertion. Basal râles are present in both lungs. There is no edema of the leg. I am giving the patient digitalis, potassium iodide up to a dosage of 30 grains (2 Gm.) after eating and a weekly injection of bismuth salicylate, 2 grains (0.13 Gm.) for twelve doses. Would you suggest sulpharsphenamine bismuth later or the "straight" neoarsphenamine, and in what dosage? Is potassium iodide to be given simultaneously with the other drugs and in what dosage? Is there danger in allowing the patient to take such large doses of glyceryl trinitrate? Please omit name.

M.D., New York.

ANSWER.—It is an excellent rule in cases of cardiac syphilis to treat the heart and not the syphilis. When the heart is functioning normally again, the treatment of the syphilis may be considered. The word "considered" is used advisedly and means an accurate evaluation of the pathologic condition and that the therapeutic campaign should be carefully planned, or possibly that no aggressive campaign should be undertaken. Too active treatment, and sometimes even cautious treatment, may make conditions much worse or hasten a fatal termination.

In this case the antisyphilitic treatment is best held in abeyance until the cardiac conditions are more normal. Rest in bed is the first essential. The value of digitalis is questionable. It may decrease the coronary flow, and in a normal rhythm it may decrease the minute volume of blood delivered by the heart by increasing the tonus or by slowing the rate. Unless it has proved itself in this case to be of undoubted benefit, it should be discontinued. Theobromine or one of its salts may be of value, by increasing the coronary flow and by diuretic action. If given during the meal, nausea is less frequent. A small dose of phenobarbital may be of benefit. Such larger doses of glyceryl trinitrate are more than one would like but cannot be avoided in such cases. The potassium iodide is best omitted for the present.

Should the cardiac condition improve, the potassium iodide may be resumed with small doses of mercury, but cautiously. After several weeks of further observation bismuth could be tried, but carefully, as untoward results occasionally follow even such treatment. It is well to bear in mind Professor Wile's observation that arsphenamine or its allies are best not used at all in syphilis of the circulatory system and in syphilis of the liver.

CHRONIC MERCURIAL POISONING

To the Editor:—I have a case of chronic mercury poisoning under my care at the present time. The patient has been working in the extracting plant of a quicksilver mine for the past three years. He is now taking potassium iodide, 7 grains (0.4 Gm.) three times daily after meals, and has been given outside work. Do patients recover completely from chronic mercury poisoning, and after a rest of from three to six months can they return to their former work without undue risk? Would the weekly administration of sulphur by mouth tend to prevent these conditions? I know that sulphur is given by some dermatologists to prevent acute mercurial poisoning during the administration of mercury in the treatment of syphilis. Is the ingestion of mercury from the improper washing of hands before eating as important as it is in lead poisoning, or does the mercury gain entrance mainly by inhalation and through the skin? This information will be greatly appreciated.

HAROLD AXLEY, M.D., Cottage Grove, Ore.

ANSWER.—Age is a salient factor in the prognosis of chronic mercurial poisoning. The average patient above 50 is likely to retain indefinitely some of the demonstrable effects of the mercury. Below 50, complete apparent recovery is the rule. Three months apart from mercury exposure, warrants, in the usual case, a return to former work. Recurrences are far more likely to result from fresh exposure than from any influence of earlier intaken mercury.

Unlike lead and arsenic, mercury seldom produces actual neuromuscular lesions. Mercury tremors may prevent any fine work with the hands or fingers, but the condition present in the tissues is quite unlike that attending wrist or ankle drop in lead poisoning, from which complete recovery is unusual. The cardinal manifestations of mercury poisoning are stomatitis, gastro-intestinal inflammation, tremors, and bizarre psychic states commonly grouped under the term "erethismus." All of these tend to disappear with or without treatment in the presence of a proper hygienic regimen. Tremors are prone to persist longer than other evidences of mercury action, and occasionally become permanent. Nephritis in mercury poisoning is inconstant. When present it may be expected to disappear in the course of weeks, but permanent damage probably has been done renal tissue.

In the United States mercury is often mined as sulphide. This salt is said to be wholly innocuous as such, owing to its insolubility. In the smelting of this ore, mercury is separated from the sulphur and becomes highly dangerous as a vapor. Knowledge that the sulphide is at least relatively harmless prompts the practice of administering sulphur as a prophylactic and curative agent. There is scant evidence that the desired combination takes place in the body. The use of sulphur is, therefore, at this time not recommended.

Mercury may be taken into the body through the skin (which is sometimes questioned), by ingestion, and by inhalation. The latter is the avenue of most frequent entry under industrial conditions. Either dusts or vapors may so enter. It is, however, highly probable that entry by more than one portal exists to some extent in all industrial mercurialism. Since minute quantities of mercury may eventually produce mercurialism, cleanliness of the hands is requisite. No food should be permitted at the work point. The chewing and smoking of tobacco should likewise be prohibited until at proper times washing may be accomplished. Shifting of work so that exposure is continued for not more than one month is a valuable procedure. At least one month should elapse between periods of exposure to mercury. A short work day is a desideratum, and complete change of clothing on leaving the work place is almost a necessity.

DIABETES — PERNICIOUS ANEMIA

To the Editor:—Will you be kind enough to answer the following questions: 1. Have trypsogen tablets (Carnrick) been shown to have any value in the treatment of diabetes mellitus? If so, can you give me any references? 2. Can you give me any references on the value of guanidine derivatives in the treatment of diabetes mellitus? 3. Is there at present on the market any gluten flour which contains less than 30 per cent of white flour? 4. Is it a recognized fact that the finding of free hydrochloric acid in the gastric contents after the Ewald test meal as tested by the Topfer reagent in a case of anemia suspected of being pernicious will rule out pernicious anemia?

C. S. DICKSON, M.D., Utica, N. Y.

ANSWER.—1. That pancreas preparations taken by mouth are not efficacious in the treatment of diabetes mellitus is the overwhelming consensus of all eminent students of this question. It is because of the ease with which insulin is destroyed by digestive ferments that the discovery of the relation of the pancreas to diabetes was not followed earlier by the successful application of this knowledge to the treatment of this disease. It was only when a way was shown of protecting the active principle (insulin) against the digestive ferments during extraction and of giving it by injection that success with it was achieved. Favorable reports after oral administration of pancreas preparations have been assiduously collected by the promoters of these nostrums; but, in view of the frequently erratic course of the disease and the lack of sufficient scientific control in these reports, they cannot be seriously considered as invalidating the solid body of facts that deny the efficacy of oral therapy.

2. The following references, out of a host of many, might suffice:

Frank, E., and Wagner, A.: Synthalin, Present State, *Ergebn. d. ges. Med.* **13**: 451, 1929.
Duncan, G. G.: Synthalin and Neosynthalin in the Treatment of Diabetes, *Pennsylvania M. J.* **32**: 385 (Nov.) 1929.
Ralli, Elaine P., and Guion, Connie M.: Synthalin in the Treatment of Diabetes, *J. Lab. & Clin. Med.* **14**: 699 (May) 1929.

3. Yes. For example, "Hoyt's Gluten Special Flour" (N. N. R.) is claimed to contain less than 5 per cent of starch.

4. As hydrochloric acid, even in normal amounts, has been found in as much as 7 per cent of cases (Friedenwald and Morrison, THE JOURNAL, Aug. 9, 1919, p. 407) its finding in a patient suspected of pernicious anemia would not rule out the possibility of the presence of this disease but should challenge the most careful possible study of the case to protect one against error.

SYPHILIS WITH ANEMIA

To the Editor:—A white man, aged 43, had a chancre twenty years ago. There has been no treatment until the present time. He now is well developed and nourished and weighs 165 pounds (75 Kg.). His skin has the yellow grapefruit color as seen in pernicious anemia. Physical examination is negative except for the color of the skin, marked pulsation of the vessels of the neck, a heaving apex beat, and a loud to and fro blowing murmur heard over all the precordial area, but most marked over the aortic area. His pulse is of the water hammer type. His blood pressure is 180 systolic and 40 diastolic on both arms. There are no abnormal areas of dulness on percussion of the chest. The blood Wassermann reaction is 4 plus. The urine is normal. The white blood count is 8,200; red blood cells, 3,400,000; hemoglobin, 65 per cent. He complains chiefly of precordial pain on exertion and weakness. I would greatly appreciate some information as to: What would be the best course of antisyphilitic treatment. Would it be safe to give this patient any neoarsphenamine and, if so, in what dosage? So far, I have given him intramuscular injections of bismuth in the form of thiobismol, 0.2 Gm., one injection a week, and at the same time iodides by mouth. Please omit name.

M.D., Michigan.

ANSWER.—The data given with reference to this patient are insufficient to permit a differential diagnosis between pernicious anemia and a secondary anemia. If the stained smear shows the typical characteristics of a primary anemia, the patient should of course be placed at once on a Minot-Murphy liver diet in addition to other forms of therapy. If the anemia is of the secondary variety, a careful search should be made for the probable cause. It is possible, but unlikely, that syphilis may be responsible for secondary anemia of this degree.

The diagnosis of syphilitic aortitis with aortic insufficiency seems to be obvious, although no information is provided as to whether the patient has had previous attacks of cardiac decompensation or now shows any signs of cardiac failure. If so, general medical treatment consisting of rest, diet, digitalis and a change of occupation to light work, if necessary, is as important as antisyphilitic treatment. Also, under these circumstances, the patient should not receive any arsphenamine product until compensation has been thoroughly regained and a considerable degree of cardiac reserve built up.

If there are no signs of cardiac failure, the probable best form of antisyphilitic treatment is to continue the injections of bismuth together with potassium iodide for at least three or four months before any arsphenamine product is given. At the end of this time, neoarsphenamine may be cautiously used in small doses beginning with 0.1 Gm. and not exceeding 0.3 Gm. at any dose. Treatment should be continuous with courses of neoarsphenamine alternating with courses of bismuth or mercury and the iodides and should be continued for a minimum period of two or three years.

SEEQIT

To the Editor:—Can you give me any information on the composition of "Seeqit," concerning which I have had inquiries from a patient? Kindly omit name if this question is published.

M. M., M.D., New York.

To the Editor:—Seeqit tablets are having quite a run in Richmond at the present time. The other evening a young woman whom I saw became violently ill after taking one of these Seeqit tablets. I have tried to find where your bureau has exposed this quack nostrum but have failed to do so.

SIDNEY S. NEGUS, Richmond, Va.
Professor of Biochemistry, Medical College of Virginia.

ANSWER.—"Seeqit," put on the market by a concern known as Laboratories JAQ Inc., now of New Haven, Conn., but earlier of New York City, was the subject of a report by the Bureau of Investigation in THE JOURNAL, Nov. 26, 1927. It was brought out in this report that the method of introducing the nostrum at that time was unusual. Instead of advertising the product in the newspapers and placing it on the shelves of drug stores, Laboratories JAQ Inc. circularized women's colleges and such large industrial concerns as employed many women. The circular letters suggested that Seeqit be distributed to the women employees when they were more or less incapacitated for work by menstrual disturbances. The nostrum was described as "the great industrial tablet which will create 100 per cent efficiency and bring health and happiness to your women workers." It was further brought out in the article that the medical directors of two large industrial concerns had both adopted this "patent medicine" to administer to the employees of their companies, and the letters from these two physicians were reproduced in facsimile by the Seeqit exploiters. Seeqit was analyzed in the A. M. A. Chemical Laboratory and found to contain about 60 per cent of amidopyrine, about 18 per cent of caffeine and about 22 per cent excipients. In other words, each Seeqit tablet was found to contain approximately 3¾ grains of amidopyrine (pyramidon) and 1 grain of caffeine.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12, 1931. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery, Ala.

CALIFORNIA: Los Angeles, Feb. 2-5, 1931. Sec., Dr. C. B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

CONNECTICUT: New Haven, Feb. 14, 1931. Basic Science, State Board of Healing Arts, 1895 Yale Station, New Haven, Conn.

DIST. COLUMBIA: Regular, Jan. 12, 1931. Washington, D. C. Sec., Dr. W. C. Fowler, District Bldg., Washington, D. C.

ILLINOIS: Chicago, Jan. 13-15, 1931. Supt., Mr. P. B. Johnson, Dept. of Registration and Education, Springfield, Ill.

MINNESOTA: Minneapolis, Jan. 20-22, 1931. Sec., Dr. E. J. Engberg, 524 Lowry Bldg., Minneapolis, Minn.

NATIONAL BOARD: Parts I and II held in any class A medical school on Feb. 11-13, 1931. Part III given by subsidiary boards in eighteen cities, Jan. 12-14, 1931. Dir., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia, Pa.

NEW YORK: Albany, New York City, Syracuse and Buffalo, Jan. 26-29, 1931. Chief, Mr. H. J. Hamilton, Albany, N. Y.

SOUTH DAKOTA: Pierre, Jan. 20-21, 1931. Dir., Dr. H. R. Kenaston, Bonesteel, S. D.

VERMONT: Burlington, Feb. 10-12, 1931. Sec., Dr. W. Scott Nay, Underhill, Vt.

WASHINGTON: Seattle, Jan. 12-13, 1931. Dir., Mr. Charles Maybury, Olympia, Wash.

WISCONSIN: Madison, Jan. 13-15, 1931. Sec., Dr. R. E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

WYOMING: Cheyenne, Feb. 2, 1931. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne, Wyo.

California July Examination

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of California, reports the written examination held at San Francisco, July 7-10, 1930. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and ninety-four candidates were examined, 175 of whom passed and 19 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
College of Medical Evangelists	(1929, 2) (1930, 38)		40
Stanford University School of Medicine	(1930, 29)		29
University of California Medical School	(1930, 45)		45
Loyola University School of Medicine	(1930, 2)		2
Northwestern University Medical School	(1924, 1) (1930, 7)		8
Rush Medical College	(1925, 1) (1929, 1) (1930, 10)		12
Univ. of Illinois Coll. of Med.	(1924, 1) (1926, 1) (1930, 1)		3
State University of Iowa College of Medicine	(1928, 1)		1
University of Louisville School of Medicine	(1929, 1)		1
Johns Hopkins University School of Medicine	(1929, 1)		1
Harvard University Medical School	(1929, 1) (1930, 2)		3
Tufts College Medical School	(1929, 1)		1
University of Minnesota Medical School	(1930, 1)		1
Washington University School of Medicine	(1929, 2)		2
Creighton University School of Medicine	(1929, 1) (1930, 6)		7
University of Nebraska School of Medicine	(1929, 1) (1930, 3)		4
Cornell University Medical College	(1930, 1)		1
University and Bellevue Hospital Medical College	(1928, 1)		1
University of Oregon Medical School	(1929, 4) (1930, 1)		5
University of Pennsylvania School of Medicine	(1929, 1)		1
Meharry Medical College	(1928, 1)		1
Marquette University School of Medicine	(1930, 1)		1
University of Toronto Faculty of Medicine	(1903, 1)		1
Royal College of Physicians and Surgeons, England	(1930, 1*)		1
Albertus Univ. Faculty of Medicine, Königsberg	(1926, 1*)		1
School of Medicine of Guadalajara	(1923, 1)		1
University of Glasgow Faculty of Medicine	(1890, 1)		1

College	FAILED	Year Grad.	Per Cent
College of Medical Evangelists	(1930) 70.2, 72.9,		73.3
Northwestern University Medical School		(1930)	73.3
University of Illinois College of Medicine		(1930)	73.8
College of Physicians and Surgeons, Boston		(1916)	71.3
University of Minnesota Medical School		(1930)	71
Washington University School of Medicine		(1930)	73
Creighton University School of Medicine		(1930)	71
University of Nebraska College of Medicine		(1928)	70.6
University of Cincinnati School of Medicine		(1930)	74.4
University of Oregon Medical School		(1929)	73
Fort Worth School of Medicine		(1910)	69.3
University of Vienna Faculty of Med.	(1926) 76.5 †,	(1928)	73.8*
McGill University Faculty of Medicine		(1930)	74.6
Charles University Faculty of Medicine, Prague		(1921)	73.6
University of Würzburg Faculty of Medicine		(1898)	66.7*
University of Guadalajara Faculty of Medicine		(1921)	66.9

Dr. Pinkham also reports 125 physicians licensed through reciprocity with other states and 11 by the endorsement of credentials from January to August, 1930. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Los Angeles		(1915)	Washington
University of California Med. School	(1893) Utah,	(1927)	Michigan
University of Colorado School of Medicine		(1928)	Colorado
Yale University School of Medicine		(1926)	Maryland
George Washington University Medical School		(1916)	Washington
Chicago College of Medicine and Surg.	(1908) Illinois,	(1917)	Wyoming
Hahnemann Medical College of Chicago		(1905)	Washington
	(1906) (1922) Illinois		
Loyola University School of Medicine		(1924)	Oregon
Northwestern University Medical School		(1902)	Kansas
	(1906) Montana, (1907) Illinois		
Rush Medical College		(1914)	S. Dakota, (1903) Oregon
	(1912) (1926, 2) Illinois, (1921) Wisconsin,		
	(1926) New York		
University of Illinois College of Medicine		(1911)	Idaho
	(1920) Minnesota, (1903) (1905, 2) (1907) Illinois		
Indiana University School of Medicine		(1925)	Kansas
Sioux City College of Medicine		(1908)	S. Dakota
State University of Iowa College of Medicine		(1896)	Missouri
	(1897) (1919) (1920) Iowa		
University of Kansas School of Medicine		(1920)	Missouri
	(1924) (1928) Kansas		
University of Louisville School of Medicine		(1912)	Kentucky
	(1884) Illinois		
Tulane University of Louisiana School of Medicine		(1918)	Penna.
	(1919) Louisiana		
Baltimore Medical College		(1898)	Michigan
Johns Hopkins University School of Medicine		(1925)	New York
Boston University School of Medicine		(1900)	Mass.
Harvard University Medical School		(1923)	Utah
	(1925) Massachusetts, (1927) New York		
Michigan College of Medicine and Surgery, Detroit		(1896)	Michigan
University of Michigan Medical School		(1890)	Montana
	(1912) (1924) (1925) Michigan		
Univ. of Minnesota Med. Sch.	(1907) (1920) (1923) (1926)		Minnesota
Missouri Medical College		(1898)	Washington
St. Louis University College of Phys. and Surgs.		(1899)	Kansas
St. Louis University School of Medicine		(1905)	Illinois
	(1920) (1922) (1928) Missouri		
University Medical College of Kansas City, Mo.		(1897)	Nebraska
	(1908) Kansas, (1911) Missouri		
Washington University School of Medicine		(1919)	New York
	(1924) Utah, (1927) Illinois, (1905) (1908) (1925)		
	(1927) (1928) Missouri		
Creighton University School of Medicine		(1919)	Nebraska
University of Nebraska School of Medicine		(1903)	Idaho
	(1920) (1925) (1927) Nebraska		
Albany Medical College		(1920)	New York
Columbia University College of Phys. and Surgs.		(1901)	Illinois
	(1918) (1926) Utah, (1924) (1926) New York		
Bellevue Hospital Medical College		(1892)	Iowa
Cornell University Medical School		(1918)	New York
Long Island College Hospital		(1919)	Utah
University and Bellevue Hosp. Med. College		(1920) (1923)	New York
University of Buffalo School of Medicine		(1902)	New York
Medical College of Ohio		(1904)	Kentucky
Miami Medical College		(1902)	Ohio
University of Cincinnati College of Medicine		(1923) (1928)	Ohio
Western Reserve University School of Med.		(1925) (1928)	Ohio
University of Oklahoma Sch. of Med.	(1925) (1928) (1929)		Oklahoma
University of Oregon Medical School		(1910) (1923)	Oregon
Hahnemann Medical College of Philadelphia		(1906)	Virginia
Jefferson Med. Coll.	(1894) N. Jersey, (1924) Mass., (1924)		New York
	(1926) Minnesota, (1884) (1899) (1920) Penna		
University of Pennsylvania School of Med.		(1904) (1920)	Penna.
	(1922) Utah, (1925) Illinois		
Meharry Medical College		(1914)	Illinois
University of Tennessee College of Medicine		(1928)	Tennessee
University of Texas School of Medicine		(1923) (1926)	Texas
Medical College of Virginia		(1917)	Virginia
Marquette University School of Medicine		(1928)	Missouri
McGill University Faculty of Med.	(1896) Oregon, (1919)		Illinois
Toronto University Faculty of Medicine		(1907)	Oregon
University of Manitoba Faculty of Medicine		(1917)	Illinois
University of Western Ontario Medical School		(1925)	Minnesota
School of Medicine of Caracas		(1894)	Porto Rico

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
College of Medical Evangelists		(1930-3)	N. B. M. Ex.
University of California Medical School		(1929)	U. S. Navy
Indiana University School of Medicine		(1924)	U. S. Navy
Johns Hopkins University School of Medicine		(1926)	N. B. M. Ex.
Harvard University Medical School		(1927)	N. B. M. Ex.
University of Minnesota Medical School		(1930)	U. S. Navy
University and Bellevue Hospital Medical College		(1897)	U. S. Navy
Western Reserve University School of Medicine		(1925)	U. S. Navy
University of Virginia Department of Medicine		(1925)	N. B. M. Ex.

* Verification of graduation in process.
† Fell below 60 per cent in two subjects.

North Dakota June and July Examination

Dr. G. M. Williamson, secretary of the Board of Medical Examiners of North Dakota, reports the oral, written and practical examination held at Grand Forks, June 30, and July 1-3, 1930. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Ten candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1929)	80
University of Kansas School of Medicine		(1929)	81
Tulane University of Louisiana School of Medicine		(1928)	80
Baltimore Medical College		(1893)	.. *
University of Minnesota Medical School	(1925) 83.5,	(1929)	82.5, 86
Cornell University Medical College		(1921)	.. *
University of Manitoba Faculty of Med.	(1925) ..*,	(1930)	79

* No grade given.

Medical Economics

THE PHYSICIAN'S INCOME TAX—1931

The taxpayer who is required to make a return must do so on or before March 15, unless an extension of time for filing the return has been granted. For cause shown, the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must contain a full recital of the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on individual citizens or residents of the United States, under the Revenue Act of 1928, is 1.5 per cent on the first $4,000 of net income in excess of the exemptions and credits, 3 per cent on the next $4,000, and 5 per cent on the remainder.

WHO MUST FILE RETURNS

1. Returns must be filed by every person having a *gross* income of $5,000 or more, regardless of the amount of his net income or his marital status. If the aggregate gross income of husband and wife, living together, was $5,000 or more, they must file a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

2. If *gross* income was less than $5,000, returns must be filed (*a*) by every unmarried person, and by every person married but not living with husband or wife, whose *net* income was $1,500 or more, and (*b*) by every married person, living with husband or wife, whose *net* income was $3,500 or more. If the aggregate net income of husband and wife, living together, was $3,500 or more, each may make a return or both unite in a joint return.

If the marital status of a taxpayer changed during the tax year, the amount of income necessary to bring him within the class required to make returns should be ascertained by inquiry of the local collector of internal revenue.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain one from the local collector of internal revenue.

The following discussion covers matters relating specifically to the physician. Full information concerning questions of general interest may be obtained from the official return blank or from the collectors of internal revenue.

GROSS AND NET INCOMES: WHAT THEY ARE

Gross Income.—A physician's gross income is the total amount of money received by him during the year from professional work, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation, and as compensation and profits from other sources.

Net Income.—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year, as stated before. These matters are fully covered in the instructions on the tax return blanks.

Earned Income.—In view of the credit of 25 per cent allowed on *earned* net income, the physician should state accurately the amount of such income as distinguished from his receipts from other sources. *Earned* income means professional fees, salaries and wages received as compensation for personal services rendered. From this, in the computation of the tax, must be subtracted certain "earned income deductions." The difference is the "earned net income."

A physician may include as "earned" income money paid by patients who were looked after in part by his assistants. In order to do so, however, the patients on whose account the money was paid must have been in fact the patients of the physician-taxpayer and have looked to him as responsible for the services performed. Moreover, the services must have been performed under the physician-taxpayer's supervision.

The first $5,000 of an individual's net income from all sources may be claimed, without proof, to be *earned* net income, whether it was or was not in fact *earned* within the meaning set forth in the preceding paragraph. Net income in excess of $5,000 may be claimed as *earned* if it in fact comes within that category. However, a taxpayer may not claim, as *earned*, net income in excess of $30,000.

The conditions relating to the computation of the tax on earned income are too elaborate to be stated here. In case of doubt, physicians should consult collectors of internal revenue.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies, and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of more or less permanent value. It may ultimately be used up, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using"; rather, it wears out.

Payments for equipment or nonexpendable property for professional use cannot be deducted. As property of this class may be named automobiles, office furniture, medical, surgical and laboratory equipment of permanent value, and instruments and appliances constituting a part of the physician's professional outfit and to be used over a considerable period of time. Books of more or less permanent value are regarded as equipment, and the purchase price is therefore not deductible.

Although payments for equipment or nonexpendable articles cannot be deducted, yet from year to year there may be charged off against them reasonable amounts as depreciation. The amounts so charged off should be sufficient only to cover the lessened value of such property through obsolescence, ordinary wear and tear, or accidental injury. If improvement to offset obsolescence and wear and tear or injury has been made, and

deduction for the cost claimed elsewhere in the return, claim should not be made for depreciation.

A hard and fast rule cannot be laid down as to the amount deductible each year as depreciation. Everything depends on the nature and extent of the property and on the use to which it is put. Five per cent a year has been suggested as a fair amount for depreciation on an ordinary medical library. Depreciation on an automobile would obviously be much greater. The proper allowance for depreciation of any property is that amount which should be set aside for the tax year in accordance with a reasonably consistent plan, not necessarily at a uniform rate, whereby the aggregate of the amounts so set aside, plus the salvage value, will at the end of the useful life of the property in the business equal the purchase price of the property or, if purchased before March, 1913, its estimated value as of that date or its original cost, whichever may be the greater. The physician must in good faith use his best judgment and make such allowance for depreciation as the facts justify. Physicians who, from year to year, claim deductions for depreciation on nonexpendable property will do well to make annual inventories, as of January 1, each year.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

AUTOMOBILES

Payment for an automobile is a payment for permanent equipment, and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, etc.

Deductible loss through depreciation is the actual diminution in value resulting from obsolescence and use, and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If the automobile is used for professional and also for personal purposes—as when used by the physician for recreation, or used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood.

What has been said with respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of other corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire, etc.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense, and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment, and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expenses incurred in the defense of a suit for malpractice are deductible as business expense. Expenses incurred in the defense of a criminal action, however, are not deductible.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

Book Notices

SURGICAL DIAGNOSIS. Volume I and Volume II. By American Authors. Edited by Evarts Ambrose Graham, A.B., M.D., Bixby Professor of Surgery, School of Medicine, Washington University, St. Louis. Cloth. Price, $35 per set of three volumes and index. Pp. 919, and 871 with 1250 illustrations. Philadelphia: W. B. Saunders Company, 1930.

SURGICAL DIAGNOSIS. Volume III and General Index. By American Authors. Edited by Evarts Ambrose Graham, A.B., M.D., Bixby Professor of Surgery, School of Medicine, Washington University, St. Louis. Cloth. Price, $35 per cent of three volumes and index. Pp. 1044, with 415 illustrations. Pp. 155 in index. Philadelphia: W. B. Saunders Company, 1930.

These three volumes with a separate general index, compiled by including contributions of various authors under the editorship of Dr. Graham, are devoted largely to surgical rather than to medical experience. Within the past few years the traditional "exploratory operation" has given way to surgical or preoperative diagnosis demanding extreme accuracy because the diagnosis is either verified or unverified promptly following operation. Today operative intervention is contraindicated until all human efforts have been exhausted in a profound attempt to arrive at a definite surgical diagnosis which is the basis for operation except in emergencies. Diagnostic procedures entail a careful clinical history, physical examination, and the origin or etiology according to the type of lesion concerned. The size and extent, function or physiologic reaction, whether local, general, primary or secondary, and the exact location of the condition or lesion must also be determined, including laboratory methods when indicated. In each instance the lesion or condition will be classified according to one of the five following or associated factors: malformation, trauma, inflammation, degeneration or tumor.

The amount of material included in this system is enormous, yet it is brought out in concise form. The treatise covers wounds throughout the body diagnosed as to the final results of direct injuries rather than the specific types of wounds; infections of surgical importance, including descriptive results of local and general reactions as well as diagnosis of infections of the hand with anatomic extension processes; postoperative complications or sequelae, with descriptions of etiologic factors concerned with pathologic observations; diseases of the blood vessels based on the physiology of the circulation of the blood and description of the various methods of examination; extremities, bones and cartilages, muscles, fascia and tendons, with full presentation on malformations, inflammations, trauma, tumors and degenerations; diagnosis in joint disease and injury, with the normal construction of joints and methods of examination; the diagnosis of various lesions of the spine as to inflammations, tumors, trauma, malformations and degenerations;

idiopathic bone fragility (osteopsathyrosis) founded on the hereditary and nonhereditary types; fractures and dislocations of extremities, presenting the various anatomic structures involved; the skin and subcutaneous tissues; diseases of the face, mouth, jaws and neck, including the thyroid and parathyroid glands all founded on trauma, tumors, inflammations, malformations and degenerations, including anatomy and physiology as well as the various functional disturbances; the diagnosis of hernia, surgical conditions of the spleen with surgical diseases of the stomach and duodenum, also diseases of the appendix, small intestine, colon and peritoneum all based on trauma, malformations, tumors, inflammations and degenerations, including gynecologic diagnosis and the diagnosis of acute abdominal emergencies; surgical diseases of the thorax and its content, with the value of bronchography as an aid in the diagnosis of diseases of the thorax, also diseases of the breast; surgical diseases of the pancreas with pancreatic function tests, also diseases of the liver and biliary passages and diseases of the rectum and anus; the clinical diagnosis of diseases of the genito-urinary organs with outlined references and bladder pressure in genito-urinary surgery; the Schilling differential blood count as an aid in surgical diagnosis; neurosurgical diseases including the skull, brain and its membranes; surgical diseases of the spinal cord; the peripheral nerves, with a discussion of the uses of surgery in conditions involving the sympathetic system; psychoses and psychoneuroses with especial reference to surgery.

The work thus covers almost every important system of the body, the notable omissions being the eye, ear, nose and throat. The presentation of each subject begins from the point of view of anatomy; then comes the case history with symptoms based on the known causes, illustrations, methods of examination, etiology, pathology, and the known physiology or function of the various organs with the final results of recent laboratory tests. The significance of the newer procedures in diagnosis is readily appreciated, for the system provides a clear concept of the indications for their use in verification in surgical diagnosis. The subject matter is well illustrated, diagramed and outlined. There are reports of the occasional atypical or unusual case that is definitely the result of the compensatory functional capacity of the body.

This work is a worthy companion to its predecessors in this field. From a surgical diagnostic point of view the system will occupy an important place as a practical work of reference.

LEHRBUCH DER CHIRURGIE: A. VON EISELSBERG GEWIDMET VON SEINEN SCHÜLERN. Herausgegeben von P. Clairmont, W. Denk, H. v. Haberer und E. Ranzi. Bände I und II. Paper. Price, 66 marks. Pp. 869, with 389 illustrations & 698, with 298 illustrations. Vienna: Julius Springer, 1930.

The many pupils and friends of von Eiselsberg in America will regard these volumes as a splendid tribute to him by the men he has developed in the Second Surgical Clinic in Vienna and therefore will be most cordially received. The twenty authors of the published chapters are well known contributors to contemporary medical literature and may be said to speak with authority for the Vienna school of surgery. The volumes are printed on excellent paper and the many pen and ink drawings, photographs and diagrams are excellently reproduced. The scope of the work is ambitious, for it includes not only the usual chapters on special surgery but also chapters on the theory and practice of roentgenology, dental surgery and prostheses, the ear, nose and throat, plastic operations on the face, and genito-urinary surgery. In volume I, certain chapters stand out as well balanced presentations of a subject undoubtedly near to the heart of the authors and reflect intimate knowledge of their subject and real ability to portray it.. Such contributions are those of Winkelbauer on the principles of surgery, of Marburg, Ranzi and Starlinger on surgery of the central and peripheral nervous system, and of von Haberer on surgery of the stomach. While of necessity space prevented full discussion of all contributions to special subjects, the omission of Gilles' tube graft in plastic surgery of the face, the multiple syringe method in direct transfusion of blood, cautery excision of the lung in lung abscess and localized bronchiectasis was rather surprising. In volume II, the surgery of the bile tract, liver and pancreas are well handled by Walzel. The Graham Cole test for vizualization of the gallbladder is mentioned, but what seems proper emphasis on this important procedure is lacking. Breitner has included many helpful illustrations in his chapter on hernia. He recommends the Bassini operation for the cure of both indirect and direct inguinal hernia. In Demel's chapter on surgery of the soft parts of the extremities, infections of the hand are carefully considered, but the influence of Kanavel's work is not particularly in evidence. Schonbauer's chapter on diseases of the bones and joints is systematically and soundly presented and is encyclopedic in its scope. The illustrations and roentgenograms are especially good. Frish presents the subject of injuries and deformities of the bones and joints. This chapter is also well illustrated and succinctly presented. Amputations, resections of joints and ligation of vessels are well illustrated and clearly discussed by Demel. In short, there is little about these volumes to criticize adversely. They are particularly valuable to students who are getting for the first time a bird's eye view of the subject of surgery and who wish little attention to details but careful and soundly presented principles. To the more experienced surgeon an opportunity is offered to sense the Vienna surgical point of view and respectfully to salute von Eiselsberg, a leading teacher and surgeon of his day.

A TEXT-BOOK OF GYNECOLOGY. By Arthur Hale Curtis, M.D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School. Cloth. Price, $5. Pp. 380, with 222 illustrations. Philadelphia: W. B. Saunders Company, 1930.

This book, written by one of the foremost gynecologists in the United States, is, as the author states, "a simple record of personal experience. Despite the fact that the volume is small, the subject matter is an essentially complete presentation of all that the author believes is vital in gynecology." One adverse criticism that may be made is that the book is somewhat too sketchy, especially for medical students in schools where the instruction in gynecology is not intensive. For students in medical schools where the course of instruction in gynecology is adequate, the book is ideal. The text is clearly written, and the illustrations, most of which are by Tom Jones, are excellent. The book abounds in illustrations and these tell more than pages of written descriptions. The bibliographies appended to each chapter are necessarily short because the book is based chiefly on the author's own wide experience. The book is divided into eight sections, the first of which deals with infectious processes, a subject in which the author has been interested for many years. The last section deals with special topics that have a bearing on gynecology, such as problems involving the urinary tract, the appendix, radiotherapy and anesthesia. The last chapter in the book, "Operative Management and Postoperative Care," is one of the most helpful, for it contains a great deal of practical advice which is useful not only to interns but also to practicing physicians and surgeons. The book should prove to be valuable to medical students, interns and general surgeons.

A WORLD PANORAMA OF HEALTH EDUCATION SEEN THROUGH MEETINGS OF THE HEALTH SECTION OF THE WORLD FEDERATION OF EDUCATION ASSOCIATIONS, GENEVA, SWITZERLAND, JULY 27-AUGUST 2, 1929. Paper. Pp. 256. New York: American Child Health Association and the Metropolitan Life Insurance Company, 1930.

In 1923 there was organized, on the initiative of American educators, the World Federation of Education Associations, which, according to the foreword of this volume, is "virtually a great world university without buildings or campus, but with departments and divisions clearly defined and entire." It has been abundantly demonstrated at the meetings so far held that this organization of the educators of the world is one of the most important agencies in promoting mutual understanding and, therefore, a higher degree of respect and good will; it cannot but be a powerful agency in the maintenance of peace among nations. Of the many lines of activity represented in this federation, none are of more universal interest and importance than the work of the health section. This volume is edited by Dr. C. E. Turner of the Massachusetts Institute of Technology and opens with a foreword by Augustus O. Thomas, president of the World Federation of Education Associations. Reports are made from many nations of the character and extent of the health education work that is going on in every civilized country. It is thrilling to realize how world wide is the interest in health in the educational world. In the chapter on varied facts of health education,

report is made from many parts of the world on such questions as: During what school years are classes in hygiene held? In what years do the pupils receive training in health habits? In what years are they weighed monthly, and is the weighing obligatory? In what years is cleanliness inspection carried out? What is the most important health practice or health habit which the school should seek to develop in the first six years? Who is responsible for the supervision of health education? What are the objectives of the physical activity program? How often are children reseated or seats adjusted to fit children? The replies to these questions from many different nations constitute an exceedingly interesting symposium. Separate chapters are given to many reports, most of them brief but adequate, concerning the activities in the several countries of the world. Everywhere the health of the school child, training in health habits and health education is receiving an amount of interest and attention that was all but unknown at the beginning of this century. Tremendous as has been the advancement in the schools in the last quarter century, it is gratifying to note from these numerous reports that there is no smug satisfaction with the present conditions and that steady progress is being made almost everywhere in the direction of better, saner, more effective methods.

MOLDS, YEASTS, AND ACTINOMYCETES: A HANDBOOK FOR STUDENTS OF BACTERIOLOGY. By Arthur T. Henrici, M.D., Professor of Bacteriology, University of Minnesota. Cloth. Price, $3.50 net. Pp. 296, with 100 illustrations. New York: John Wiley & Sons, Inc., 1930.

In spite of the fact that fungi were the first micro-organisms to be definitely connected with human diseases, too little exact knowledge concerning the classification and activities of the yeasts, molds and actinomycetes is available to the microbiologist. During the past few years there has been an awakened interest, particularly in the relation of molds to human infections. Henrici's book is timely. While being relatively brief, the material presented is quite adequate for the needs of the laboratory worker. The most interesting chapters are those on the dermatophytes and the oidia and monilia. The illustrations throughout the book are excellent.

LECTURES UPON THE NURSING OF INFECTIOUS DISEASES. By F. J. Wollacott, M.A., M.D., B.Ch., Senior Assistant Medical Officer, Grove Hospital, Metropolitan Asylums Board. Fourth edition. Cloth. Price, $1.50. Pp. 195. New York: G. P. Putnam's Sons, 1930.

In this book, the main facts concerning the etiology, symptoms, course, epidemiology and treatment of the various infectious diseases are presented in lucid fashion. While much of the material may be of little direct value to the nurse, it will nevertheless aid her in a better understanding of the nursing care required. It will help her anticipate and prepare for the instructions she is likely to receive. To this edition has been added material on epidemic encephalitis and anterior poliomyelitis. The latest facts concerning diphtheria and scarlet fever immunization are discussed. Other additions are typical temperature charts and a table for reference of incubation periods and periods of infectivity.

PROBLEMS AND METHODS OF RESEARCH IN PROTOZOOLOGY. By Twenty-Seven Contributors. Edited by Robert Hegner, Professor of Protozoölogy, and Justin Andrews, Associate in Protozoölogy, in the Johns Hopkins University School of Hygiene and Public Health. Cloth. Price, $5. Pp. 532, with 32 illustrations. New York: Macmillan Company, 1930.

This work follows a unique and valuable plan often suggested but rarely tried. The two editors have succeeded in carrying out the plan in a fashion that will commend itself not only to students in this field but to a wider circle interested in this new and growing topic. Although protozoology as a field of science is one of the newest in biology, there has already grown up an extensive literature which is so widely scattered that it is brought together with difficulty and so extensive that the student working on one topic hardly finds it feasible to search out and study materials in other parts of the field. The work includes forty-two chapters and an extensive bibliography, together with an author's index and a subject index. The chapters cover an exceedingly wide range from methods and reagents to life histories, biologic relations, taxonomy, experimental work and differential diagnosis. It will appeal to investigators and students because the material is organized in such a way as to facilitate the search for particular information. Especial emphasis is laid on the problems of research as seen by individual authors in their particular fields. The work must be highly commended to all in any way interested in the subject.

DIE ZEREBROSPINALFLÜSSIGKEIT. Von Prof. Dr. med. V. Kafka. Paper. Price, 30 marks. Pp. 400, with 46 illustrations. Leipzig: Franz Deuticke, 1930.

The purpose of this book, according to the author, is to give a critical review of all the research that has been done on cerebrospinal fluid. This it does exceptionally well. One marvels at the vast amount of material that it contains. An idea of the exhaustive nature of the book can be obtained from the bibliography alone, which covers eighty-three pages. Throughout, the author attempts to distinguish between the characteristics of normal and of pathologic fluid but he points out the difficulties encountered in drawing the line of demarcation between them. He believes that data on cerebrospinal fluid in lower animals do not necessarily hold good for man and that in order to get normal values it is necessary to study cerebrospinal fluid in human beings. He is of the opinion that ventricular fluid offers a much better field than lumbar or cistern fluid for the study of the normal constituents of cerebrospinal fluid. Unlike other works written in German or French, this one gives a great deal of space and credit to books and articles in English. The author is particularly generous in his reference to American authors. The monograph is a splendid contribution to the study of the cerebrospinal fluid.

ATHLETICS IN EDUCATION. By Jesse Feiring Williams, A.B., M.D., Professor of Physical Education, Teachers College, Columbia University, and William Leonard Hughes, A.M., Professor of Physical Education, De Pauw University, Indiana. Cloth. Price, $3. Pp. 414, with 57 illustrations. Philadelphia: W. B. Saunders Company, 1930.

With the growing interest in athletics throughout the world, there comes a need for the assumption of a definite position on the relation of athletics to the general educational program. The first portion of this book deals with such topics as the place of physical education in general education, the aim of physical education, and the objectives in athletics. The remainder of the book has to do with policies and administrative objects in athletics, organization, management, finances and like subjects. There is one chapter on the medical control of athletics in which the discussion is rather meager. At times the authors seem to become involved in a forest of verbiage that often hides the ideas they are trying to present. This seems especially true in the chapter dealing with the aim of physical education. The general educator, teacher, director and athletic coach will find much information in this book that will aid him in solving many of the problems that are likely to present themselves in the athletic program.

MAN VS. MICROBES. By Nicholas Kopeloff. Cloth. Price, $5. Pp. 311, with 130 illustrations. New York: Alfred A. Knopf, 1930.

The subject matter contained in this book has been discussed before in diverse ways. It is found in most textbooks of bacteriology. It is here presented in more romantic fashion for the lay reader. The literate person is cognizant of the existence of micro-organisms and their relationship to fermentation, putrefaction and disease. In the first portion of this book, the development of the field of bacteriology is discussed in an interesting manner; but the remainder of the book is reduced to a catalogue of diseases and cures, to a listing of cocci, bacilli and spirilla, so that the lay reader may find the subject dull and tiresome.

INTERNAL MEDICINE. By Sir Humphry Rolleston, G.C.V.O., K.C.B., M.D., Regius Professor of Physic in the University of Cambridge, England. Clio Medica, IV. A Series of Primers on the History of Medicine. Edited by E. B. Krumbhaar, M.D. Cloth. Price, $1.50. Pp. 92. New York: Paul B. Hoeber, Inc., 1930.

This pocket-sized volume should be of especial interest to students and practitioners of medicine who desire to obtain a bird's eye view of the history of their profession during the course of an evening's reading. The history of internal medicine from early historical times to the present is most interestingly told. As expected in such a compact volume, only the high lights—great movements in medical thought, great discoveries that have influenced the development of medical science

—are mentioned, yet apparently all receive proper attention and are fitted into the narrative in such a way as to make most attractive reading. The volume is thoroughly indexed as to personal names and subjects and should serve a useful purpose for ready reference.

Medicolegal

Medicated Massage Not the Practice of Medicine

(Rubin v. United States, 37 Fed. (2d) 991)

Rubin was charged with practicing medicine without a license, in violation of the medical practice act of the District of Columbia, of June 3, 1896, 29 Stat. 198. The evidence showed that he maintained a so-called health institute, under the supervision of a W. E. Philes, a licensed physician, but that Rubin himself did not profess to be a physician. He was consulted, however, by a patient, who testified that she told him that she had sleeping sickness; that he said that he could cure her within two weeks; but that he did nothing but apply to her body something like vaseline, with his hand. Other testimony was to the effect that the treatment left large marks on the patient's body, and that when Rubin was asked about the pain from which the patient suffered, he replied:

> Oh, the germ has been killed. She has no germ any more. I could stop that but I do not want to stop that because it would not be good for her condition.

Another witness testified that Rubin was called "doctor" and that he said that she had arthritis and treated her by dabbing a liquid on her body with his hand, burning her badly and leaving scars. Rubin, it was testified, professed to obtain from India by airplane the liquid that he used in treatment. There was testimony to the effect that in another case Rubin had professed to be a doctor, that he promised to cure a patient for $300, and that he rubbed liquid all over the patient's body, with resultant severe burns. For the defense, witnesses testified that Rubin had given them "his massage treatment with his liquid," and they were allowed to testify that they had been benefited thereby. At the close of the evidence the defendant moved for a directed verdict. The motion was refused, and Rubin was convicted of practicing medicine without a license. He appealed to the Court of Appeals of the District of Columbia.

The Act of June 3, 1896, said the Court of Appeals, makes it a misdemeanor to practice "medicine" or publicly profess to do so, without a license. It does not, however, define "the practice of medicine." The term must be construed in the light of the general understanding as to its meaning. In *Springer* v. *District of Columbia*, 23 App. D. C. 59, said the court, the court said:

> The practice of medicine is a pursuit very generally known and understood and so also is that of surgery. The former includes the application and use of medicines and drugs for the purpose of curing, mitigating or alleviating bodily diseases. . . .

There is nothing in the act showing a legislative intent that the term "practicing medicine" should bear any other than its common meaning. Under Section 12 of the act, any person may engage in "the practice of massage" without a license, and the meaning of the term "practice of massage" is left to common understanding, since the act does not define it. Webster defines it thus:

> Massage: A method of treating the superficial soft parts of the body for remedial or hygienic purposes consisting in rubbing, stroking, kneading, tapping, etc., with the hand or an instrument; med., to treat by means of massage; to rub or knead; as, to massage a patient with ointment.

No witness testified that Rubin made any examination of persons treated; there was no testimony that his treatment amounted to anything more than applying or rubbing "something like vaseline" over the body; there was no evidence that he professed to do more than massage with his ointment. Said the Court of Appeals:

> The fact that he called himself a "doctor" is of little significance, for, as stated by Dr. Philes in his testimony, "the word Doctor does not without an explanation mean anything in particular as it is used by osteopaths, veterinarians, chiropractors, dentists, athletic instructors and others." The fact that Rubin "stated to one witness that she had arthritis" is of no particular significance, in view of the fact that he made no examination of her. It amounted to nothing more than an expression of opinion, and to characterize it as a diagnosis would accord it undue dignity.

There was testimony to the effect that Rubin made statements as to the efficacy of his particular kind of massaging. Rubin had a legal right to practice massaging, and, said the court, it would be a strained and unreasonable construction of the act to hold that he was without right to express his opinion as to the beneficial results of the treatment.

The Court of Appeals held, therefore, that the defendant's motion for a directed verdict should have been granted. The judgment of the trial court was reversed and the cause remanded with instructions to discharge the defendant, Rubin.

Interpretation of Roentgenograms

(Appleby v. Cass (Iowa), 229 N. W. 210)

Appleby's right temple was injured in a collision between an automobile driven by him and an automobile owned by Cass. He sued Cass. In the course of the trial, one of Appleby's physicians undertook to explain to the jury the significance of various features of a roentgenogram offered in evidence. Counsel for Cass objected, asserting that this was not proper testimony and that the roentgenogram itself was the best evidence of what it showed. The objection was overruled. The jury rendered a verdict in favor of Appleby, and Cass appealed to the Supreme Court of Iowa.

In *Elzig* v. *Bales*, 135 Iowa 209, 112 N. W. 540, the Supreme Court of Iowa held that a photograph was itself the best evidence of what appeared in it, and in *Lang* v. *Marshalltown L. P. & R. Co.*, 185 Iowa 940, 170 N. W. 463, it applied the same rule to a roentgenogram offered in evidence to show a curvature of the spine, the question being only whether it showed a straight line or a curved one. In the latter case the roentgenogram served a purpose similar to that of a photograph. In *Daniels* v. *Iowa City*, 191 Iowa 811, 183 N. W. 415, 416, however, the court opened the door to expert evidence offered for the interpretation of a roentgenogram, saying:

> It is proper for an expert to explain an x-ray photograph in such particulars that are not understood by a layman. See *State* v. *Matheson*, 142 Iowa, 414, 120 N. W. 1036, 134 Am. St. Rep. 426. What the jury could see and understand about the matter is not the subject of expert testimony, and this we understand to be the effect of our prior decisions. A radiograph may be used for purposes of demonstration by an expert as though he had the object itself before the jury for explanation. *Sheldon* v. *Wright*, 80 Vt. 298, 67 A. 807.

The Supreme Court might properly, it said, take judicial notice of what is well known to the profession, namely, that a roentgenogram does not necessarily or ordinarily interpret itself to the observation of a nonexpert. A roentgenogram carries various lights and shadows, the significance of which is known to the expert and is not known to the nonexpert. In the present case, the purpose of the roentgenogram was to show the existence and location of "a perforation of the temple." The physician in the case had diagnosed a "hole" in the temple. This "hole" was indicated to the experts by certain characteristics of light and shadow in the roentgenogram. It was not observable as a "hole" on the ordinary scrutiny of a nonexpert. The purpose of the expert testimony was to explain the meaning of the lights and shadows in the roentgenogram. Such an explanation was essential to a proper understanding of it, and the admission of expert testimony for that purpose was proper. Only when a roentgenogram is offered in evidence to serve nothing more than the function of a photograph is it subject to the rules of evidence applying to photographs.

The judgment of the trial court was reversed, however, on grounds not pertinent to the subject matter of this abstract.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, February 20-21. Dr. George S. Stevenson, 370 Seventh Ave., New York, Secretary.

American Social Hygiene Association, New York City, January 23-24. Dr. William F. Snow, 370 Seventh Avenue, New York City, General Director.

Pacific Coast Surgical Association, Victoria, British Columbia, February 27-28. Dr. E. L. Gilcreast, 384 Post Street, San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

12: 537-741 (Nov.) 1930

Spirochetes in Chickens: Those of Intestinal Tract. M. B. K. Harris, Baltimore.—p. 537.

Virulence of Pure Line and Several Strains of Entamoeba Histolytica for Liver of Cats and Relation of Bacteria, Cultivation, and Liver Passage to Virulence. L. R. Cleveland and E. P. Sanders, Boston. —p. 569.

Various Improvements in Cultivation of Entamoeba Histolytica. L. R. Cleveland and J. Collier, Boston.—p. 606.

Cultivation and Differentiation of Haemoflagellates in Autoclaved Media. L. R. Cleveland and J. Collier, Boston.—p. 614.

Serologic Studies in Experimental Coccidiosis of Rabbits. G. W. Bachman, Baltimore.—p. 624.

Immunity in Experimental Coccidiosis of Rabbits. G. W. Bachman, Baltimore.—p. 641.

Jaundice in Experimental Coccidiosis of Rabbits. G. W. Bachman and F. E. Menendez, Baltimore.—p. 650.

Precipitin and Complement-Fixation Tests on Dog Serum with Antigen from Dog Hookworm, Ancylostoma Caninum. J. E. Stumberg, Baltimore.—p. 657.

Immunity and Mechanism of Splenic Control in Bartonella Anemia of Rats. W. W. Ford and C. P. Eliot, Baltimore.—p. 669.

Eperythrozoon Coccoides in Mice. C. P. Eliot and W. W. Ford, Baltimore.—p. 677.

Hemolytic Properties of Organisms Belonging to Paratyphoid Group. C. P. Eliot and W. W. Ford, Baltimore.—p. 681.

Salting Out of Causative Agent of Chicken Tumor with Globulin Fraction of Berkefeld Filtrate of Tumor. M. R. Lewis and W. Mendelsohn, Baltimore.—p. 686.

Annual Variation in Antirachitic Radiation from Sun and Sky in Baltimore. J. H. Clark, Baltimore.—p. 690.

Annual Variation of Therapeutic Radiation from Sun and Sky in Colorado. J. R. Earp, Boulder, Colo.—p. 696.

Relation of Dry Season to Level of Helminth Infestation in Panama Village. L. Schapiro and W. W. Cort, Baltimore.—p. 699.

Experimental Measles with Rabbits: Thermic and Leukocytic Reactions of Carriers and Bacterium Lepisepticum or Bacillus Bronchisepticus. G. H. Bailey and S. C. Cheng, Baltimore.—p. 709.

American J. Medical Sciences, Philadelphia

180: 745-884 (Dec.) 1930

Roentgenology of Thymus in Infancy and Differential Diagnoses of Enlarged Thymus and Treatment. H. K. Pancoast, Philadelphia.—p. 745.

*Pathogenesis of Exophthalmic Goiter. D. Marine, New York.—p. 767.

*Size of Heart in Goiter. L. M. Hurxthal, O. J. Menard and M. E. Bogan, Boston.—p. 772.

*Edema. H. Elwyn, New York.—p. 781.

*Gastric Hemorrhage Due to Familial Telangiectasis. L. N. Boston, Philadelphia.—p. 798.

*Effect of Liver Extract on Blood of Normal Persons. M. P. Crane, I. Howard and W. P. Murphy, Boston.—p. 803.

*Influence of Gastric Juice on Erythropoiesis in Pernicious Anemia. W. S. Middleton and R. H. Stiehm, Madison, Wis.—p. 809.

*Incidence of Sickle-Cell Trait in Industrial Workers. G. M. Brandau, Houston, Texas.—p. 813.

Chlorotic Anemia of Pregnancy: Three Cases. M. B. Strauss, Boston. —p. 818.

*Epituberculosis. B. Goldberg and B. M. Gasul, Chicago.—p. 824.

Protective Power of Pleura. M. Joannides, Chicago.—p. 833.

Ocular Manifestations of Sympathetic Nervous System Hyperactivity in Conditions Other Than Exophthalmic Goiter and Especially in Hypertension. H. B. Friedgood, Boston.—p. 836.

Pathogenesis of Exophthalmic Goiter. — Marine points out that, while the view that exophthalmic goiter is essentially a thyroid disease still is the prevailing one, and while therapy should still be based on this assumption, he is convinced that a much more fundamental disturbance lies in a deficiency of some function of the suprarenal cortex and sex glands, which either provides another means of promoting tissue oxidations or has to do with the regulatory control of these oxidations. The principal manifestation of exophthalmic goiter is clearly a loss of control over these oxidation processes, and as a result of this there occurs a physiologic attempt toward compensation by an increased production of the thyroid hormone.

Size of Heart in Goiter.—Teleroentgenograms were made by Hurxthal et al. in 100 consecutive cases of toxic and 100 consecutive cases of nontoxic goiter in the Lahey Clinic. No definite relationship could be found between the duration of the disease or loss of weight and the size of the heart. Cardiac enlargement as determined by teleroentgenography showed a fairly direct relationship to age and coincident cardiovascular disease. The number of enlarged hearts of different degrees was practically the same in both toxic and nontoxic goiter. It is suggested that, if hyperthyroidism causes cardiac enlargement or hypertrophy and dilatation, it is slight.

Edema. — Elwyn discusses the theories of causation and modes of development and summarizes them as follows: Of general edema there is a slowing up in the rate of movement of water from the depots through the tissue barriers to the blood stream. With the normal water and salt intake and their rapid removal from the blood into the tissues, the free water there is rapidly increased. When a certain amount of water has accumulated, it becomes visible as edema. The slowing is the result of a central regulatory change and affects the constellation of electrolytes in the tissue barriers through which the water moves to the blood and lymph streams. This slowing is produced, first, whenever the water content of the blood threatens to be unduly increased, as in cardiac failure or in acute diffuse nephritis; secondly, when the change is primarily in the regulatory center, along with the depression of other vegetative functions, especially of the basal metabolic rate. This is the case in chronic undernutrition and in chronic wasting disease. Thirdly, when there is a primary disturbance in the central regulation for the control of sodium chloride in the body. This condition is found in certain cases of edema without cardiac or renal diseases, and without chronic undernutrition.

Gastric Hemorrhage Due to Familial Telangiectasis.—Familial telangiectasis, Boston says, is the etiologic factor in a definite class of hemorrhage, which takes place in the presence of normal physiologic responses by both the capillary and the venous blood. Recurrent gastric hemorrhages were experienced during early life in each of the three cases studied by him, and attacks of hemorrhage were often accompanied by brief periods of syncope. Judging from the small number of case reports available, familial telangiectasis does not shorten the span of life or inhibit development. Familial gastric hemorrhage has been observed in persons who have also experienced recurrent attacks of hemorrhage from other mucous surfaces. The vascular defects common to familial hemorrhages from the mucous membranes are to be found among other members of the same family and in their near relatives. The tendency to familial hemorrhage is transmitted by both the maternal and the paternal parent to offspring.

Effect of Liver Extract on Blood of Normal Persons. —Following control studies made by Crane et al., during which the normal blood values were determined, the contents of eight vials of a potent liver extract, the equivalent of 800 Gm. of liver, were ingested daily for a period of fourteen days by four normal young men. During the period of observation, each took his customary normal diet. In the observation period red blood cell counts were made from blood obtained from puncture of the ear lobe twice daily, at approximately 10 a. m. and 3 p. m. There was observed a slight rise in the reticulocytes and an increase in red blood cells and percentage of hemoglobin, together with a slight rise in the blood-iron level. Striking changes in the blood did not occur nor were the clinical symptoms or signs of polycythemia observed during such treatment. There was no evidence to suggest increased hemolysis of the blood during the period of observation.

Influence of Gastric Juice on Erythropoiesis in Pernicious Anemia.—Two cases are reported by Middleton and Stiehm which support Castle's contention that normal gastric juice alone does not contain the active maturating factor essential to erythropoiesis.

Incidence of Sickle-Cell Trait in Industrial Workers. — Brandau found that the percentage of occurrence of the sickle-cell trait in 150 Negro men applying for work was 6.67 per cent.

Epituberculosis.—Goldberg and Gasul present the histories and results of observations in ten typical cases of epituberculosis. Every one of the cases presented a picture originally described by Eliasberg and Neuland. The onset was never acute, there was little fever, and the general condition of the patients was practically always good. All were ambulatory cases, and every one of them showed a considerable gain in weight during the time under observation. All the patients showed definitely positive tuberculin reactions; the sputum was always negative for tubercle bacilli. Stereoscopic plates, showing at first dense homogeneous shadows involving a lobe of a lung, usually the right upper lobe, and gradually clearing up, leaving in some cases no residue at all, and in others calcified areas, complete the clinical description of epituberculosis. A study of the blood gives no additional help in diagnosing this condition; the complement-fixation test for tuberculosis was of absolutely no value.

American J. Obstetrics & Gynecology, St. Louis,

20: 595-748 (Nov.) 1930

*Present Status of Treatment of Carcinoma of Cervix Uteri. E. Zweifel, Munich, Germany.—p. 595.
Results of Radium Treatment of Carcinoma of Cervix. H. C. Pitts and G. W. Waterman, Providence, R. I.—p. 607.
Roentgen Ray as Adjunct in Obstetric Diagnosis. H. B. Matthews, New York.—p. 612.
Dysmenorrhea of Endocrine Origin Responding Satisfactorily to Medical Therapeutic Measures. A. Wendel, Chicago.—p. 633.
Placenta Praevia Patients Delivered by Abdominal Cesarean Section at Boston Lying-In Hospital. F. S. Kellogg, Boston.—p. 643.
Delivery Through Natural Passages Following Cesarean Section. C. M. McLane, Baltimore.—p. 650.
Use of Thymophysin: Thirty-Five Cases. H. W. Schoeneck and F. J. Schoeneck, Syracuse, N. Y.—p. 658.
*Biologic Diagnosis of Early Pregnancy by Aschheim-Zondek Test. G. Liese and E. S. Auer, St. Louis.—p. 667.
*Aschheim-Zondek Reaction in Hydatidiform Mole and Malignant Chorionepithelioma. H. C. Mack and A. E. Catherwood, Detroit.—p. 670.
*Music in Operating Room. J. A. McGlinn, Philadelphia.—p. 678.
Importance of Urologic Investigations in Gynecologic Patients. I. W. Kahn and R. B. Walker, New York.—p. 683.
*Cystitis Emphysematosa: V. Case in Woman in Which Trauma Appeared to Be Etiologic Factor. R. G. Mills, Fond du Lac, Wis.—p. 688.
Fibromyoma of Uterus Weighing 133 Pounds Removed at Operation: Case. M. Behrend, Philadelphia.—p. 699.
Placenta Increta. B. Kwartin and N. H. Adler, New York.—p. 703.
Unusual Acardiacus. T. M. Boulware, Birmingham, Ala.—p. 708.
1. Double Uterus, Double Cervix and Double Vagina. 2. Absence of Vagina. R. W. McBride, Woodland, Calif.—p. 710.

Treatment of Carcinoma of Cervix Uteri.—According to Zweifel the absolute percentage of cures by radical abdominal surgery is 20 per cent, radical vaginal surgery 17 per cent, and irradiation therapy only 17.7 per cent. Irradiation may be combined with surgery as preoperative, postoperative or preoperative and postoperative irradiation. It is impossible, at present, to determine which procedure is the best. The combination of irradiation and surgery produces better results than surgery alone. Surgery should never, therefore, be performed without irradiation. The greatest advantage which irradiation possesses is the fact that it is possible to cure a certain percentage of inoperable cases. Irradiation has practically no primary mortality.

Diagnosis of Early Pregnancy by Aschheim-Zondek Test.—Liese and Auer have used this test to a considerable extent and have confirmed the results obtained by the originators of the test. They have found the reaction extremely sensitive and reliable. Failures like those of other experimenters amounted to about 2 per cent, and the so-called anterior pituitary extracts marketed in this country do not yield in infantile mice the biologic reactions generally accepted as characteristic for those hormones.

Aschheim-Zondek Reaction in Hydatidiform Mole and Malignant Chorionepithelioma.—Mack and Catherwood report a case of hydatidiform mole which showed a negative reaction six weeks after expulsion of the mole, whereas another case has continued to show strong positive reactions for three months after delivery and curettage. A second curettage, performed ten weeks after expulsion of the mole because of prolonged uterine hemorrhage associated with subinvolution of the uterus, showed a well developed decidua, hydropic villi and isolated chorionic cells in the endometrium. There was no evidence of chorionepithelioma. Examinations of the urine of this patient have continued to give positive reactions. Examinations of the urines of these cases when positive showed a high concentration of anterior pituitary hormone, positive reactions being obtained in dilutions as high as 1 to 10 after six injections of 0.3 cc. each in chorionepithelioma, and in a dilution of 1 to 5 in one case of mole.

Music in Operating Room.—McGlinn is an enthusiastic advocate of spinal anesthesia. In order to keep the mind of the patient occupied and divert, from him, the thought of operation, he has been using music for a year and has been well satisfied with the results. He regards it as a valuable addition to the operating room. A special self-playing automatic record-changing instrument with a superior type of reproducer is used. Experience has shown that soft, soothing, melodious music is the kind most acceptable to all patients.

Cystitis Emphysematosa.—A case of cystitis emphysematosa is reported by Mills, with clinical and pathologic details. This case represents an early lesion, which probably was initiated by the slight trauma produced by a catheter abrading the mucosa of the bladder. There were two lesions, one older than the other, corresponding to catheterization on two successive days, the latter on the day preceding death. The injuries must have been trivial and did not cause the loss of an appreciable amount of blood, as the control specimens of urine were free from erythrocytes. Mills suggests that any form of injury to the mucosa, whether by a catheter, instrument or spontaneous hemorrhage, may initiate the lesion if other conditions are fulfilled. Cystitis appears to be necessary as a background on which cystitis emphysematosa may develop. Evidence is accumulating that the lesion results from some form of infection. The lymphatics are capable of transporting the gas to a certain extent beyond the point of its production. They are at first distended and then degenerate. There is no evidence that giant cells arise by multiplication of the cells of their endothelial lining. It is now certain that cystitis emphysematosa develops during life and is not a postmortem phenomenon. Lowered resistance, at least of the bladder, seems to be necessary for its development, but whether this condition is limited to the last few days of life of a patient practically moribund, or whether it may occur in a patient with only serious disease of the bladder, has not been determined.

American J. Roent. & Radium Therapy, New York

24: 477-604 (Nov.) 1930

Campiodol (Iodized Rapeseed Oil): Use in Roentgenographic Visualization of Body Cavities. M. A. Glaser, Los Angeles.—p. 477.
*Mikulicz's Disease and Mikulicz Syndrome: Treatment by Irradiation. T. Leucutia and A. E. Price, Detroit.—p. 491.
Unusual Cholecystograms and Interpretation. A. J. Delario, New York.—p. 516.
*Hyperplasia of Thymus. S. W. Donaldson, Ann Arbor, Mich.—p. 523.
*Angio (Perivascular) Endotheliomas About Jaws. S. Withers, Denver.—p. 534.
Evaluation of Radium and Roentgen Therapy in Advanced Cancer with Various Combinations of Wavelengths. B. P. Widmann and J. L. Weatherwax, Philadelphia.—p. 540.
*Roentgen Sign of Plumbism: Lead Line in Growing Bone. E. C. Vogt, Boston.—p. 550.
Roentgenologic Diagnosis of Papilloma of Duodenum. C. A. Waters, Baltimore.—p. 554.
Aneurysm of Horizontal Aortic Arch. G. Rosenbaum, Philadelphia.—p. 558.

Mikulicz's Disease and Mikulicz Syndrome.—On the basis of a study of nine cases, Leucutia and Price believe that "the symmetrical enlargements of the lacrimal and one or more pair of the salivary glands," originally described as Mikulicz's disease, should be divided into two main groups: Mikulicz's disease proper and the Mikulicz syndrome. Under Mikulicz's disease proper are included all cases of symmetrical, noninflammatory swellings of the lacrimal and salivary glands without involvement of the lymphatic system and without alteration of the blood. Under the Mikulicz syndrome are included the cases in which the enlargements of the lacrimal and salivary glands are manifestations of some clinically and pathologically well defined disease, such as leukemia, tuberculosis, syphilis, lymphosarcoma, Hodgkin's disease and uveoparotid fever. In the first group, the technic of the radiation therapy is based on the principle that there is a lymphocytic infiltration with an organized structural arrangement, so-called lymphadenosis, of the

affected lacrimal and salivary glands. This implies that divided doses (15 to 50 per cent S. U. D.) spread over a longer period are more beneficial than the one single massive dose as administered in neoplastic processes. For the same reason, the quality of the rays used is of considerably less importance. In the second group, since the involvement of the lacrimal and salivary glands is merely a manifestation of a more or less distinct clinical entity, a technic should be used which conforms to the routine procedure of irradiation applied in that particular entity. It has been repeatedly suggested that Mikulicz's disease proper be considered an "aleukemic stage" of leukemia. There are two reasons why this should not be done: First, the average life duration is considerably longer in Mikulicz's disease than in either the acute or chronic forms of leukemia; second, the radiosensitivity of the lymphocytic infiltration, because of its organized structural arrangements in Mikulicz's disease, is definitely less than in the more malignant and consequently less differentiated lymphocytic proliferations in leukemias.

Hyperplasia of Thymus.—Of the ninety-four families analyzed by Donaldson, thirty-six are classified as having children with thymic enlargement, forty-five as negative regarding this condition and the remaining thirteen as being doubtful. Of the thirty-six positive families, there is a history of thyroid disturbance in four mothers, while in the forty-five negative families there are only two with a thyroid history. There is no significant evidence present to substantiate the belief that some underlying relation between the two organs has a bearing on the condition known as hyperplasia of the thymus.

Angio-Endotheliomas About Jaws.—A brief résumé of the clinical and pathologic aspects of angio-endotheliomas is given by Withers in connection with the report of four cases arising in the vascular channels of the jaws. It is especially urged that vigilance be exercised to differentiate these cases of endotheliomas about the jaws. The diagnosis of endothelioma should be accepted only when the evidence is clear and conclusive.

Roentgen Sign of Plumbism.—The sign described by Vogt consists of a marked flaring of the ends of the long bones with an unusually dense zone at the ends of the diaphyses. On chemical examination, lead was found in this zone.

American Journal of Surgery, New York

10: 225-384 (Nov.) 1930

*Blood Vessel Visualization (Arteriography; Veinography; Angiography) in Vivo. Makoto Saito, Kazunori Kamikawa and H. Yanagizawa, Nagoya, Japan.—p. 225.
Hemangiomata of Intestine: Case. R. D. McClure and S. W. Ellis, Detroit.—p. 241.
Bilateral Ureterosigmoid Anastomosis by Coffey Method: Four Cases. G. L. Hunner, Baltimore, and B. D. Massey, Pierre, S. D.—p. 245.
Benign Lesions of Anus and Rectum. R. A. Cutting, New Orleans.—p. 255.
*Differential Diagnosis of Peptic Ulcer and Chronic Appendicitis. I. W. Held and A. A. Goldbloom, New York.—p. 274.
*Manipulative Treatment of Chronic Arthritis of Spine. P. N. Jepson and E. A. Brav, Philadelphia.—p. 285.
*Calcium Fixation. E. J. Berkheiser, Chicago.—p. 294.
Bloodless Modification of Porro-Cesarean Section. G. DeCourcy, Cincinnati.—p. 299.
Combination Anesthesia with Sodium Isoamylethyl Barbiturate as Basal Agent. F. L. Grandstaff, Santa Barbara, Calif.—p. 300.
*Ovarian Graft in Uterus. G. S. Foster, Manchester, N. H.—p. 305.
Tuberculosis of Urinary Tract. B. A. Thomas, Philadelphia.—p. 308.
New Urographic Medium: Emulsified Campiodol. A. A. Kutzmann, Los Angeles.—p. 320.
Regional Anesthesia. R. B. Henline, New York.—p. 325.
Tuberculous Salpingitis. A. Stein, New York.—p. 331.
*Pregnancy with Bilateral Ovarian Cysts. S. Eiss, New York.—p. 338.
Operative Arthrodesis of Spine. C. M. Gratz, New York.—p. 341.
Hemorrhoids. W. L. Secor, Kerrville-on-the-Guadalupe, Texas.—p. 344.
New Surgical Tourniquet. J. C. Moloney and A. Schmitt, Detroit.—p. 349.
Skin Clip Forceps. G. W. Swift, Seattle.—p. 350.
Malignant Papillary Adenocystoma of Right Ovary with Metastasis to Cervix. L. E. Phaneuf, Boston.—p. 352.
Prolapse of Gastric Polyp into Duodenum with Marked Secondary Anemia. J. W. Hinton and J. Buckstein, New York.—p. 355.
Urology in Children: Two Cases. P. M. Butterfield, New York.—p. 358.
Giant Bilateral Ureteral Calculi. A. Harris, New York.—p. 362.
Mommsen's Method of Submaximal Stimulation for Tibial Pseudarthrosis. A. Krida, New York.—p. 366.

Blood Vessel Visualization in Vivo.—Saito et al. assert that arteriography, which has not been generally used in practice because of troublesome reactions, is performed with perfect safety by means of the injection of a fine emulsion of iodized oil. This method is valuable in the diagnosis of various circulatory conditions. It has been used to observe the course of arteries in fracture and dislocation; to determine the amputation line; to note the site and extent of the collateral circulation after amputation of an extremity; the vascular condition in the extremity in spontaneous gangrene, in tumors of the extremity and after their resection; in arterial encephalography; also in local blood vessel conditions, as aneurysm, varices and venous valve defects. This new contrast medium has given clear, satisfactory roentgenologic plates. It has been used also in pyelography, myelography and visualization of fistulas and articular cavities. For pyelography it is especially valuable because of the low viscosity, the absence of irritation of the mucous membranes, and the strong radioactivity, which insures clear shadows.

Differential Diagnosis of Peptic Ulcer and Chronic Appendicitis.—Held and Goldbloom emphasize the important rôle of chronic appendicitis in the causation of peptic ulcer symptoms. Often the removal of a chronically diseased appendix removes the cause of peptic irritation and such removal may actually prevent the formation of such an ulcer. The differential diagnosis of chronic appendicitis and peptic ulcer is of the utmost importance because of the possibility of avoiding prolonged medical treatment of the symptoms of peptic ulcer which are due to a chronically diseased appendix. There are sufficient objective criteria to make this differential diagnosis possible, if heeded.

Manipulative Treatment of Chronic Arthritis of Spine.—Jepson and Brav assert that, in early cases of spondylitis, deformity may be prevented by ordinary measures of physical therapy and support. The majority of cases of spondylitis are permitted to advance to the stage of deformity. In the stage of deformity there is admittedly little hope for permanent cure of the disease. It is therefore an orthopedic problem to correct the existing deformity and prevent its progress. When the disease has advanced to the stage of bony union, corrective measures are injurious to the life of the patient. If deformity without bony union is present, correction may be obtained by forceful manipulation and maintained by orthopedic appliances. The operation is justifiable in that it not only makes the patient a more useful member of the community but also materially relieves the mental drudgery of his affliction.

Calcium Fixation.—Berkheiser uses a mixture of organic calcium and phosphorus, closely related to the mineral composition found in normal bone and tooth structure. The formula is: combined calcium salts, 2 grains; phosphorus (lipoid), ¾ grain; magnesium salts, ⅓ grain, and silicic acid, ⅛ grain. This was administered in a routine way to a series of patients with fracture showing delayed union and nonunion. The period of nonunion varied from a few months to four and one-half years. The results have been encouraging.

Ovarian Graft in Uterus.—Foster describes a uterine intramural, endometrium separation, autogenous ovarian graft technic, by means of which the ovarian graft will make an early and complete take. Removal of any disease condition of the tubes which results in the permanent closure of this avenue may be disregarded. Ovulation will be discharged directly into the uterine cavity, pregnancy will occur and the patient cured of her previous condition will be happy in the final result in raising a family.

Pregnancy with Bilateral Ovarian Cysts.—Eiss operated on a patient owing to the fact that signs, symptoms and laboratory data pointed toward some intra-abdominal catastrophe. Two ruptured ovarian cysts, both with twisted pedicles and free fluid in the abdominal cavity, were found. According to the menstrual history obtained, the patient was four months pregnant and therefore fell into the category of those patients operated on during the first half of pregnancy. This period is considered the safest period during which one can, with a fair degree of safety, remove the ovaries and their corpora lutea without disturbance of the existing pregnancy. The case under discussion amply illustrated this fact by its subsequent course and events. It also proves the contention of Frank and others that pregnancy can go normally to term in the absence of the ovaries and their corpora lutea.

Annals of Surgery, Philadelphia

92: 801-960 (Nov.) 1930

*Postoperative Pulmonary Atelectasis. H. Brunn and S. Brill, San Francisco.—p. 801.
*Treatment of Fractures by Open Operation and Direct Fixation. A. Young, Glasgow, Scotland.—p. 838.
Fractures of Neck of Femur: Treatment of Intracapsular Fracture. H. McKenna, Chicago.—p. 882.
Pyloric Occlusion from Sulphuric Acid: Case. H. A. Bruce, Toronto, Canada.—p. 897.
*Alkalosis Due to Pyloric Stenosis Simulating Nephritic Uremia. D. B. Pfeiffer, Philadelphia.—p. 900.
*Serum Treatment of Bacteremia Due to Hemolytic Streptococcus. J. H. Jopson and J. Eiman, Philadelphia.—p. 910.
Activity of Lumbar Sympathetic Nervous System. J. J. Morton and W. J. M. Scott, Rochester, N. Y.—p. 919.
*Recent Advances in Treatment of Circulatory Disturbances of Extremities. A. W. Allen, Boston.—p. 931.
*Roentgen Diagnosis of Ileus. A. Ochsner and A. Granger, New Orleans.—p. 947.
Fibrosarcoma of Mediastinum: Case. K. W. Doege, Marshfield, Wis.—p. 955.

Postoperative Pulmonary Atelectasis.—Brunn and Brill present an extensive review of the literature and a report of personal observations. They are convinced that the predominating postoperative pulmonary complication is atelectasis. This may be of any extent, from the involvement of small portions of pulmonary parenchyma to a whole lung or both lungs. Bronchial obstruction is the most important single factor in the production of atelectasis, and with the relief of the obstruction the lung tissue reinflates. Preoperative, operative and postoperative factors that may aid the formation of this lesion have been discussed. Whether these factors, either alone or through a reflex, may initiate the process and secondarily produce obstructing secretion, the authors are unable to state. Bronchoscopically, they noted four types of findings in atelectasis: (1) the presence of an obstructing plug or characteristic tenacious sputum; (2) a profuse, purulent secretion; (3) no secretion in the bronchi; (4) one unusual case of local bronchial edema. In the prophylaxis and treatment, the application of the principles of intrabronchial drainage in the posture of the patient, in combination with carbon dioxide inhalants, is important. The use of bronchoscopic aspiration in prophylaxis, as well as in treatment, is suggested. The prognosis of this postoperative lesion, unless complicated by a secondary process, is excellent. The authors do not believe that all postoperative pulmonary complications, excluding embolic types, are of the same nature. From clinical, roentgen-ray and bronchoscopic observations there seems to be one type that is more like lobar pneumonia. An example of this type is given.

Treatment of Fractures by Open Operation and Direct Fixation.—An experience extending over twenty years leads Young to conclude that open operation, and the adoption of some form of direct fixation are not merely justified in a certain number of unusual fractures, or in a certain number of fractures with unusual displacement, but are justified in a substantial proportion of fractures of the long bones almost as a routine procedure. In certain bones, indeed, it is the surgical procedure not merely of choice but of necessity. Open operation and direct fixation ought to be possible, and are possible, in any surgical clinic worthy of the name, and there should hardly even be the fear of possible occasional septic infection. In the case of fractures or of fracture separations in the region of the elbow where there is any appreciable displacement, open operation and direct fixation afford the most favorable conditions for the early restoration of function and for the normal continuance of growth at the epiphyseal line. Young has not found that by the adoption of open operation and direct fixation there has been induced any diminution in the activity and efficiency of the processes of repair. Union has not been in any way retarded, but rather the reverse. In his whole experience he knows of only one case in which union was substantially delayed, and of no case in which union absolutely failed. "There is, he says, no doubt at all that in the large majority of cases dealt with by open operation, and in which the fragments are fixed by some internal mechanical means, the period of confinement to bed—the period of hospitalization—ought to be, and is, substantially shortened. With increasing experience he becomes progressivly more and more convinced that correct anatomic reposition and realinement are the most important factors of all in the promotion of normal functional restoration.

Alkalosis Due to Pyloric Stenosis Simulating Nephritic Uremia.—Pfeiffer is convinced that alkalosis, though less common than acidosis, is a definite and important condition demanding clinical recognition and specific treatment. It may be suspected especially in conditions of profuse and prolonged vomiting, and in obstructive states, mechanical or physiologic, involving the stomach and upper intestinal tract. Symptomatically it shows itself by (1) vomiting, usually profuse, often by gastric hypersecretion and dilatation; (2) dehydration with asthenia and reduced blood pressure; (3) restlessness, irritability, nervous twitchings and, in certain cases, typical tetany; (4) in the later states, stupor and coma resembling uremia of nephritic origin. The urinary conditions found are those of acute glomerulonephritis, and phenolsulphonphthalein elimination is diminished. The blood chemistry is diagnostic, the essential changes being diminution in chlorides and increase in carbon dioxide. Nitrogen retention is also an early and significant sign. Treatment consists in restoring the chemical balance of the blood plasma. In severe cases intravenous therapy is indicated and should accompany or, if possible, precede urgent surgery.

Serum Treatment of Bacteremia Due to Hemolytic Streptococcus.—Analysis made by Jopson and Eiman of forty-three cases of hemolytic streptococcus blood stream infections has shown that polyvalent antistreptococcic serum is of a decided value in the treatment of these cases. Twenty-one patients received no serum; four received insufficient amounts and in late stages. Five patients, or 21 per cent, recovered. Nineteen patients, or 79 per cent, died. Nineteen cases were treated under conditions that were satisfactory for the test of the value of the serum. Four patients, or 21 per cent, died and fifteen, or 79 per cent, recovered. The serum had no effect on either primary or secondary foci and infected thrombi in the circulation. The importance of surgical treatment of primary and secondary foci is emphasized.

Treatment of Circulatory Disturbances of Extremities.—Allen discusses 763 cases; 569 were cases of varicose veins, and the remaining 194 patients suffered from some other form of circulatory disturbance. Patients with mild symptoms may carry on for an indefinite period by occasional advice in the outpatient department concerning rest, hygiene, care of the feet, proper protection with lamb's wool and woolen stockings, and exercises to be done at home. In suitable ambulatory cases of vasomotor disorder or thrombo-angiitis obliterans the patient may spend twenty-four hours in the emergency ward occasionally, at which time a protein shock with typhoid vaccine intravenously may be given. In cases of sufficient severity to cause complete disability, as well as those in which constant observation is needed, the patients are treated in the hospital. They are given any emergency attention necessary and are started on the routine measures of rest, heat, hygiene, fluids, food and exercises. After stabilization, specific treatment is instituted according to the condition. Advancing infection is drained and advancing lymphangiitis amputated. Nonspecific foreign protein is tried in thrombo-angiitis obliterans, peripheral nerve alcohol injection in cases of intractable pain, and sympathetic ganglionectomy carried out in advanced vasomotor disorders. In chronic cases an individual time limit is set and if improvement is not evident in a given time (from one to eight weeks, depending on the condition and contributory factors), more radical measures are adopted. If a person with a hopeless extremity which has remained at a standstill or definitely grown worse in spite of treatment refuses amputation, proper disposal is arranged through the social service, with all the helpful advice for comfort that can be given.

Roentgen Diagnosis of Ileus.—Ochsner and Granger warn that in acute ileus the administration of opaque mediums by mouth is dangerous. Plain roentgenograms of the abdomen without the administration of contrast mediums are valuable in diagnosis of acute ileus. Within a few hours after an inception of an intestinal obstruction there is an abnormal accumulation of gas and fluid proximal to the obstruction. Even though gaseous distention of the intestine as revealed roentgenologically is indicative of intestinal obstruction, the finding of multiple fluids due to the presence of fluid capped above by gas is much more striking and therefore more diagnostic. In order to

demonstrate this, roentgenograms should be taken in such a manner that junction of the fluid with the gas may be visualized; i. e., an anterior-posterior view with the patient in the upright position or lying on either side, or a lateral view with the patient lying in a supine position. Results obtained in thirty-two cases of ileus in which this diagnostic procedure was used are reported.

Archives of Dermatology & Syphilology, Chicago

22: 777-956 (Nov.) 1930

Érythème Annulaire Centrifuge: Six Cases. T. N. Graham and B. Throne, New York.—p. 777.
Rôle of Yeasts in Production of Superficial Dermatitis. S. W. Becker and E. B. Ritchie, Chicago.—p. 790.
*Effect on Skin of Emotional and Nervous States: II. Masochism and Other Sex Complexes in Background of Neurogenous Dermatitis. J. H. Stokes, Philadelphia.—p. 803.
Dermatitis Gangrenosa Infantum. M. J. Morrissey and H. S. Reynolds, Hartford, Conn.—p. 811.
*Larva Migrans (Creeping Eruption). H. Montgomery, Rochester, Minn. —p. 813.
Steatocystoma Multiplex. O. S. Ormsby and C. W. Finnerud, Chicago. —p. 822.
Nodule of Ear Simulating Chondrodermatitis Nodularis Chronica Helicis. J. V. Klauder, Philadelphia.—p. 833.
*Arsphenamine Hypersensitiveness in Guinea-Pigs: II. Experiments Demonstrating Rôle of Skin, as Originator and as Site of Hypersensitiveness. M. B. Sulzberger, New York.—p. 839.
*Clinical Excretion of Bismuth: Bismuth Sodium Tartrate. P. J. Hanzlik and H. G. Mehrtens, with assistance of D. C. Marshall, F. Watson and J. Spaulding, San Francisco.—p. 850.
*Comparative Excretion and Absorption of Different Bismuth Products. P. J. Hanzlik and H. G. Mehrtens, with assistance of D. C. Marshall, F. Watson and J. Spaulding, San Francisco.—p. 861.
Eczema: V. Potassium, Total and Diffusible Calcium Ratios in Blood of Patients with Diseases of Skin. J. V. Klauder and H. Brown, Philadelphia.—p. 877.
Pierre François Rayer, 1793-1867. B. B. Beeson, Chicago.—p. 893.

Effect on Skin of Emotional and Nervous States.—Three examples representing stages in complexity and in clarity of demonstration of a sexual psychosis as an element in the maintenance if not the actual origin of itching are reported by Stokes. In one of the cases, a masochistic-sadistic complex appeared to be superposed on a generalized dermatitis of apparently diathetic and focal infectious background (late eczematoid of Rost). In a second and more completely studied case, a substitution of scratch pleasure for sexual orgasm, possibly under a combination of hereditary predisposition with a mother-fixation inhibiting normal relief in marriage, was observed to constitute what Sack has described as a true onanistic equivalent —"cutaneous masturbation." No other explanation of the cutaneous picture, except a possible minor food allergy, could be indentified despite the most searching and repeated investigation.

Larva Migrans (Creeping Eruption).—A case of larva migrans is reported by Montgomery, in which the larva of *Gastrophilus* was demonstrated in serial sections at the juncture of the epidermis and the cutis. Detailed histopathologic description is given, including distinction between the effects of the presence of the organism itself, of toxins liberated by the larva and of scratching.

Arsphenamine Hypersensitiveness in Guinea-Pigs.—The skin of guinea-pigs and sensitization to arsphenamine are linked in some mechanism of immunologic significance. Sulzberger asserts that this is demonstrated by the fact that while the skin can easily be sensitized by a single intradermal injection, no demonstrable sensitization takes place when the drug is administered into another organ, provided skin contact can be avoided. Furthermore, no hypersensitivity of other organs can be demonstrated by internal injection, even in animals in which the skin is hypersensitive to a high degree. In addition to this, it is once more shown that animals with hypersensitive skins are not anaphylactic in the classic sense. The affinity of neoarsphenamine for the skin cannot be attributed to the possibility that the organ receiving the sensitizing injection is the only organ sensitized, for intradermal injections of small quantities of horse serum do not sensitize the skin but do sensitize the bronchioli. It must therefore be assumed that certain substances selectively sensitize certain organs. This selection varies not only with the substance but also with the race of animal. Just as in most eczematous conditions in human beings, so also in the apparently similar neoarsphenamine sensitization in guinea-pigs, the attempts to find antibodies and to discover relationships with classic anaphylaxis have so far failed. In practice these new facts concerning the important and seemingly unique rôle of the skin in this sensitization (which resemble the observations of Besredka in anthrax) indicate the importance of the most careful avoidance of the skin in the administration of drugs that carry the danger of skin sensitization (arsphenamine and gold compounds), the necessity of a technic by which paravenous injection is absolutely avoided and the use of the intradermal route in attempts at desensitization in eczematous conditions.

Clinical Excretion of Bismuth.—The urinary excretion of bismuth after different doses of the soluble bismuth sodium tartrate (73.8 per cent bismuth) in aqueous medium was studied by Hanzlik and Mehrtens in eleven human subjects, four of whom had edema of cardiac origin. The excretion in the subjects with edema did not differ to an important degree from that in subjects without edema. The excretion was characterized by a prompt onset, early peak or maximum, a comparatively short duration, without marked individual variation, thus differing in several respects from the insoluble products and those used in oil. Bismuth was invariably present on the day following administration, indicating rapid absorption; the peak or maximum daily excretion occurred on the second day, and the excretion lasted about thirteen days (median) after single doses, equivalent to 0.022 Gm. of bismuth. The results were similar after two and three single doses. Those after seven, nine and seventeen successive doses showed a delayed peak, and the data on duration were incomplete. After single doses, the median amount of bismuth excreted from day to day was about 1 mg. and at the end of two weeks was a median total of 45.2 per cent of the total administered. The total excretion after two doses, or 0.044 Gm. of bismuth, was about the same, the results after repeated doses representing higher total dosage, namely, 0.066, 0.2, 0.31 and 0.52 Gm. of bismuth, being incomplete. The total excretion of bismuth after the highest doses used (0.2 Gm. and over), as also the daily maximum of bismuth excreted, did not increase in proportion to the increase in dosage but, on the contrary, decreased, confirming a similar tendency observed in the excretion of bismuth after the injection of bismuth metal, previously reported. The excretion of bismuth occurs mainly in the urine. In general, the intramuscular injection of soluble bismuth sodium tartrate results in the prompt absorption, distribution and uniform excretion of bismuth. Thus, a prompt saturation of the tissues may be expected. With repeated, intensive medication, accumulation of the bismuth will supervene owing to the slowing down of excretion. The rapid removal of bismuth indicates the necessity of more frequent injections, but these should be used with suitable rest periods to avoid harmful accumulation. Presumably, the muscular depots after bismuth sodium tartrate are negligible, although bismuth continues to be excreted in the urine for days in amounts too small to be estimated, but probably not as long as after the insoluble and oil-suspended products.

Comparative Excretion and Absorption of Bismuth Products.—The bismuth content of seventeen bismuth products used in syphilis and reported in the literature and a classification on the basis of physical and chemical properties are given by Hanzlik and Mehrtens. A comparison of the clinical urinary excretion of bismuth during the first two weeks after the intramuscular injection of the different types of bismuth indicates that the water-soluble bismuth sodium tartrate, used in aqueous medium, was more efficiently absorbed than the insoluble products, used in oil or in aqueous medium (bismuth metal, potassium bismuth tartrate and bismuth salicylate), all of which was previously investigated. The same tendency was found among the same and other products of similar types when the total clinical urinary excretion, as reported in the literature, was compared, although the comparison was not accurate on account of the variables present.

Journal of Preventive Medicine, Baltimore

4: 417-506 (Nov.) 1930

Yellow Fever in Colombia: Epidemic in Socorro in 1929. A. Peña Chavarria and G. Bevier, Bogotá and R. Serpa, Bucaramanga.—p. 417.
Postepidemic Diagnosis of Yellow Fever by Passive Immunity Test. N. P. Hudson and S. F. Kitchen, New York.—p. 459.
Neutralization of Poliomyelitis Virus by Human Serum. H. J. Shaughnessy, P. H. Harmon and F. B. Gordon, Chicago.—p. 463.
Bacterium Dysenteriae, Sonne Type. S. A. Koser, D. O. Reiter, E. Bortniker and E. L. Swingle, Chicago.—p. 477.

New Orleans Medical and Surgical Journal

83: 279-350 (Nov.) 1930

Another Modification of Precipitin Test for Syphilis. F. M. Johns, New Orleans.—p. 279.
Precordial Pain. L. J. Clark, Vicksburg, Miss.—p. 282.
Treatment of Varicose Veins and Varicose Ulcers by Injection of Sclerosing Solution. S. C. Lyons and C. B. Brewster, New Orleans. —p. 287.
Physical Relationship to Mental Retardation. H. R. Unsworth, New Orleans.—p. 293.
Duodenal Ulcers in Childhood. W. F. Henderson, New Orleans.—p. 295.
Study in Roentgen Ray from Memory's Storehouse. H. G. McCormick, Laurel, Miss.—p. 300.
Treatment of Hyperchlorhydria. O. W. Bethea, New Orleans.—p. 307.
Simulation of Visceral Lesions by Neuralgia of Nerves Supplying Abdominal Wall. E. P. Hall, Vicksburg, Miss.—p. 311.
Survey of Eighty-Five Cases of Rectal Stricture. G. W. Owen, Shelby, Miss.—p. 314.
Controllable Spinal Anesthesia. J. C. Culley, Oxford, Miss.—p. 318.
Symphalangism. J. H. Musser, New Orleans.—p. 325.

Oklahoma State Medical Assn. Journal, Muskogee

23: 353-384 (Nov.) 1930

Hyperventilation with Carbon Dioxide and Oxygen in Early Bronchopneumonia. P. S. Nagle, Oklahoma City.—p. 353.
Care and Classification of Insane. P. L. Hays, Vinita.—p. 359.
Physiology and Pharmacology of Vegetative Nervous System. G. W. Robinson, Kansas City, Mo.—p. 363.
Trigeminal Neuralgia. W. T. Coughlin, St. Louis.—p. 369.
Foreign Bodies in Eyeball. W. A. Cook, Tulsa.—p. 371.
Detachment of Retina. L. C. Kuyrkendall, McAlester.—p. 373.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 849-892 (Nov. 22) 1930

Rest, Work and Play in Health and Disease. E. F. Buzzard.—p. 849.
*Problems of Melanoma. J. Ewing.—p. 852.
Clinical Aspect of Disturbances of Parathyroid. J. C. Meakins.—p. 856.
*Albuminuria of Pregnancy: Late Results. J. B. Banister.—p. 857.
*Intestinal Origin of Eclampsia. R. C. Brown.—p. 859.
*Serologic Types of Pneumococcus in Lobar Pneumonia. J. M. Alston and D. Stewart.—p. 860.
Osteogenesis Imperfecta. J. E. Wright.—p. 862.

Problems of Melanoma.—Ewing summarizes his discussion as follows: The work of Soldan and of Masson has proved beyond a reasonable doubt that the nevus cell is derived from and belongs to the peripheral sensory nerve and end-organs. Whether this cell is neuro-ectodermal or mesoblastic is uncertain, but an epidermal origin seems to be excluded. The nevus cell in the nerve nevus produces chromatophores, and the two types of cells are more or less interchangeable. Yet the adult chromatophore seems to enjoy a more or less independent existence and function apart from nevus cells. Whether there are other sources of chromatophores is uncertain but improbable. In the epidermis there are slumbering unpigmented and wandering pigmented chromatophores and probably also other specialized cells similar to nevus cells belonging to the intradermal nerve-end apparatus. The latter cells may be the tactile corpuscles of Merkel-Ranvier. The conditions in the epidermis may therefore duplicate those found in the derma. In the development of melanoma exactly the same processes seem to occur, and the same relations between nevus cells and chromatophores seem to be exhibited in the epidermis as in the nerve nevus of the derma and subcutaneous tissue. The theory of the epithelial origin of the nevus cell and the chromatophore has always been seriously questioned by most pathologists and, in the light of the new evidence, has become less acceptable. All the appearances in the epidermis suggesting the active participation of epithelium in melanoma may be referred to the growth of specialized cells belonging to the nerve-end apparatus. Yet the histologic evidence in this field is complex and inconclusive. Melanoma has important relations to neurofibromatosis. This fact supports the view that the cells in melanoma are of neural origin, and it is difficult to reconcile with the epithelial theory.

Albuminuria of Pregnancy: Mental Symptoms.—Banister's experience has been that from 15 to 20 per cent of women known to have eclampsia do exhibit a confusional mental state, which state may even extend to mania. As a rule, their recovery is complete and generally fairly rapid, and any permanent mental instability is an expression of some preexisting state and not a result of the toxemia of pregnancy, though it is probable that the toxemia has contributed to making the condition a permanent one.

Intestinal Origin of Eclampsia.—Brown asserts that in cases of toxemia of pregnancy there is present in the circulation a toxin (or toxins) of unknown origin which affects the cells of many organs, interfering with their normal functions. The kidneys, if affected, no longer act as barriers to the passage of certain colloids from the blood into the urine. Should the liver be affected, it may no longer detoxicate portal poisons but allow either all or some of them to pass into the general circulation, introducing a secondary toxemia, which may be the cause of the convulsions.

Pneumococcus Types in Lobar Pneumonia.—The incidence of pneumococcus types in 186 patients suffering from acute lobar pneumonia in Edinburgh during the past eighteen months is recorded by Alston and Stewart and also the mortality rates associated with the different types. Type I was found in 53 cases; type II in 75 cases; type III in 7 cases and type IV in 47 cases. The death rate in relation to type incidence was: type I, 23 per cent; type II, 31 per cent; type III, 71 per cent, and type IV, 10 per cent. A brief review of the incidence of the different types of pneumococci in lobar pneumonia according to a number of observers from 1913 to date is given.

Lancet, London

2: 1055-1108 (Nov. 15) 1930

Paroxysmal Tachycardia. W. E. Hume.—p. 1055.
Filter-Passing Transmissible Bacteriolytic Agents (Bacteriophage). F. W. Twort.—p. 1064.
Contact Glasses for Ametropia. A. Rugg-Gunn.—p. 1067.
Cauterization of Adhesions in Treatment of Bronchiectasis by Artificial Pneumothorax. J. A. S. Pinchin and H. V. Morlock.—p. 1070.
*Pulmonary Embolism in Infant Following Aural Infection. J. A. Jones. —p. 1070.

Pulmonary Embolism in Infant Following Aural Infection.—Jones reports the case of an infant, aged 7 months, who, when 3 months old, had had pneumonia, after which a discharge began from both ears. A typical acute mastoid abscess developed on the left side. A Schwartze operation was performed. The next eight days were uneventful, the infant apparently making excellent progress, while the local condition was entirely satisfactory. On the ninth day the infant became cyanosed, with very rapid respirations. The onset was quite sudden, the child having been apparently quite well a few minutes before. Oxygen was given through nasal catheters and camphor was injected. Death occurred in a few hours. At the postmortem examination, an old clot, rounded, was found blocking the branches of the pulmonary artery to both lower lobes and right middle lobe. There was no pneumonia, but these lobes were collapsed. Emphysema of the upper lobes was present. The heart was normal. Unfortunately, the condition of the ears and lateral sinuses could not be discovered.

Practitioner, London

125: 565-660 (Nov.) 1930

Future of Professions. M. Fishbein.—p. 565.
Examination of Heart and Blood Vessels from Point of View of Life Insurance. T. Thompson.—p. 575.
Reflections on Insurance Practice. W. C. Bosanquet.—p. 594.
Examination of Under-Average Life for Insurance. F. W. Burton-Fanning.—p. 604.
*Adenitis of Facial Lymph Gland. H. Bailey.—p. 618.
*Spasm of Colon: Allergic Nature. A. A. Bisset.—p. 621.
Minor Surgery of Rectum. H. Jackson.—p. 627.
Problem of Adenoids. H. Merrall.—p. 636.
Reconsideration of Congenital Dislocation of Hip in Childhood. J. Bruce. —p. 642.

Adenitis of Facial Lymph Gland.—As the facial gland shares with all other lymphatic glands the liability to infection, Bailey urges that the possibility of its existence should be better known. He cites two cases in point. A localized swelling of the cheek, a swelling not attached to the integument or the mucous membrane, may reasonably be an adenitis of the facial

lymph gland. Few individuals possess a facial lymphatic gland; consequently, infection coursing along the lymphatics of the cheek usually passes directly to the submaxillary nodes. When a facial lymphatic gland is present, its enlargement will continue to perplex the diagnostician unaware of its existence.

Spasm of Colon: Allergic Nature.—The presence of a family or personal history of symptoms of an allergic nature, combined with a positive dermal reaction and the increase or decrease of the abdominal symptoms following on the ingestion or elimination of the suspected food or foods, Bisset says, is conclusive that the condition in such cases is one of food allergy. The explanation of the cause of the manifestations of food allergy is difficult, but it may be primarily due to an inherited constitution which renders the individual hypersensitive to foreign proteins; or it may conceivably be that, under certain disturbed conditions of the intestinal tract, proteins that are incompletely metabolized in the course of digestion may be absorbed in such a form or in such quantities as to sensitize the individual. In addition to the presence of the hypersensitive condition, mechanical factors also must be taken into account, as the mucous membrane of the bowel when in a sensitized state is also irritable, and the bowel contents may mechanically set up a response that is quite apart from the allergic condition.

Quarterly Journal of Medicine, London

23: 1-131 (Oct.) 1930

*Investigation into Gastric Secretion of Hundred Normal Persons over Age of Sixty. D. T. Davies and T. G. Illtyd James.—p. 1.
*Bundle Branch Block. I. G. W. Hill.—p. 15.
Bronchial Carcinoma. J. Maxwell and W. A. Nicholson.—p. 29.
*Spontaneous Cardiac Rupture. E. H. Beresford and C. J. C. Earl.—p. 55.
*Paroxysmal Auricular Fibrillation. J. Parkinson and M. Campbell.—p. 67.
Harmful Effects of Irradiation (Roentgen Rays and Radium). H. Rolleston.—p. 101.

Gastric Secretion of Persons Over Age of Sixty.—Out of a series of 100 persons ranging between 60 and 95 years of age, examined by Davies and James, 43 showed a normal secretion of hydrochloric acid, 13 showed a high secretion, 12 showed a diminished secretion, and 32 showed no free hydrochloric acid secretion. Small volumes of juice and an inhibition to secretion during the first one to one and one-half hours were common to all. Achlorhydria, by the use of histamine, could be divided again into as many apparent as true, thereby making the proportion of true achlorhydria to be 15 per cent (approximately). The ferment content of the gastric juices varied in the majority and bore little relationship to hydrochloric acid secretion. In none of the cases of achlorhydria was pepsin found to be completely absent. Histamine stimulated pepsin production in addition to hydrochloric secretion. Pepsin secretion occurred in the absence of demonstrable hydrochloric secretion, but no case was encountered presenting free hydrochloric acid without pepsin. The secretion of hydrochloric acid appears to be more susceptible to outside factors than that of pepsin, in that it is more easily inhibited or more quickly deranged. Anemia was more commonly found in those possessing a diminished gastric secretion than in those with an abundant secretion. Anemia, although slight in degree and indeterminate in type, was more common in those possessing a low ferment content of the gastric juice than in those with a high ferment content. Atrophic changes of the mucous membrane of the tongue were found with more frequency in those cases showing a diminished secretion of gastric juice than in those with a normal secretion.

Bundle Branch Block.—Forty-one cases of bundle branch block are recorded by Hill, with clinical observations. The diagnosis of the condition by means of physical signs alone has been investigated, and the conclusion confirmed that this is not feasible. The influences of atropine and digitalis on the degree of block have been investigated in certain cases. No demonstrable change affecting the ventricular complexes was produced by therapeutic doses. The right branch of the bundle has been traced by serial sections in two cases which during life showed the features of right bundle branch block. In both, and in one child's heart cut as a control, the right branch was found to spit up or lose its identity at a higher level than was expected from anatomic teaching. In one case, in addition to widespread fibrosis of the myocardium which did not involve the bundle or its branches, foci of round-cell infiltration were demonstrated in the main stem and in the right branch. From their nature, and from the known syphilitic element in the case, these foci are thought to be possibly of a specific origin. The question of "incomplete bundle branch block" has been considered, and it is urged that this term be not applied to cases yielding an incomplete electrocardiographic picture of bundle branch block, but solely to cases which show analogy to incomplete block of the main stem; i. e., delayed conduction. Several cases of this type are described.

Spontaneous Cardiac Rupture.—Forty-six cases of spontaneous cardiac rupture are reviewed and discussed by Beresford and Earl. Recent acute infarction of the heart is considered to be almost invariably the underlying cause. The association of rupture with senility and mental disease was noted. The mechanism of rupture is discussed and the importance of excessive fat, of softening, and of hemorrhage as factors, is emphasized.

Paroxysmal Auricular Fibrillation.—In two thirds of the 200 patients studied by Parkinson and Campbell, the nature of the irregularity was decided by graphic methods. In 70 per cent there was structural heart disease, due in about equal proportions to rheumatism, high blood pressure, or primary myocardial disease. Goiter was causative in 15 per cent, and no underlying cardiac disease was apparent in the remaining 15 per cent. The etiology is therefore known in 85 per cent, though the provocative stimulus for the attack is obscure. Symptoms need not be very severe, perhaps no more than palpitation, breathlessness, and inability to continue at work. With a longer attack, or when the heart is already in difficulties, all the signs and symptoms of congestive heart failure may develop. Syncope is rare, and paroxysms are seldom associated with anginal pain, unless both pain and paroxysm result from coronary thrombosis. Between the attacks, most patients are able to lead a normal life. For the immediate attack the outlook is excellent, as it will seldom persist more than two days; but, if it lasts a week, permanent fibrillation becomes much more likely, and after two weeks almost certain. If a long interval of freedom follows the first few attacks, the prospect for the future is good as they may not recur for years, or not at all, especially when there is nothing else pointing to heart disease. If there are only occasional attacks in the course of a year, the liability to any increase in the frequency is small; but unless some effective treatment can be found they will continue as before, and as the years go by some patients will get them more frequently. If the attacks recur every few weeks or more often, they are apt to become more frequent without treatment and it is probable, though never certain, that permanent fibrillation will ensue. In some patients, especially in those with rheumatic heart disease, this may happen within a few months after one or two attacks; but if it does not happen so soon it may be postponed for years. Rheumatic heart disease makes permanent fibrillation more likely. The absence of any underlying heart disease makes it much less likely. When a paroxysm of palpitation has been diagnosed as auricular fibrillation and has lasted more than two or three hours, quinidine will often arrest the attack. Digitalis should not then be given, partly because of its slower action and partly because it may prolong the attack; if, however, quinidine is discarded as ineffective, digitalis should be used, and in large doses if failure supervenes. It will rarely be indicated unless an attack has lasted for days rather than for hours. Between the attacks, when they recur often enough to require treatment, and when no remediable cause such as hyperthyroidism can be found, quinidine should be used. In the absence of contraindications as much as 5 grains (0.3 Gm.) three times a day should be tried before it is stopped. If quinidine fails, and if general measures will not relieve the attacks, most patients would be well advised to bear with them; but, should they become unbearable, digitalis must be given, for it may reduce their frequency. Even if it induces permanent fibrillation, some patients find themselves better so. Moderate doses, such as 30 minims (2 cc.) daily, should first be used and large doses avoided unless permanent fibrillation is desired. In some patients the presence of a goiter indicates surgical intervention, for the realization that goiter in almost any of its forms may be the cause of these paroxysms is of great importance; the authors' experience leaves them in no doubt about the success of this treatment.

Archives des Maladies de l'Appareil Digestif, etc., Paris

20: 889-1016 (Oct.) 1930

*Modification of Form, Position and Tonicity of Stomach Under Influence of Diet. J. D. Klimenko.—p. 889.
Relation Between Secretory Function of Stomach and Chlorine and Acid-Base Equilibriums of Organism. A. Landau and J. Glass.—p. 907.
Experiments in Hepatography. I. Pavel, St. M. Milcou and A. M. Tanasesco.—p. 936.
Lambliasis of Biliary Tract. R. Deschiens.—p. 951.

Modification of Position of Stomach Under Influence of Diet.—The most frequent modification of the normal position of the stomach is its prolapse, or gastroptosis, which in turn produces an atonicity of the muscles as well as various anomalies of form. Klimenko agrees with Jarotzky in believing that gastroptosis is usually caused by an increased secretion of gastric juice, which produces a contraction of the pylorus and of the duodenum that prevents elimination from the stomach. This increases the weight of the contents of the stomach and under the influence of the increased weight the stomach sinks into the abdominal cavity. Decreased secretion of bile and pancreatic juice can have the same effect, since undigested fat also causes contraction of the pylorus when it reaches the duodenum. The author describes a diet, developed by Jarotzky, which he himself has used with uniformly excellent results in the treatment of seven patients with gastroptosis in connection with various gastric disturbances. In all of the cases the stomach regained its normal form, position and tonicity in from seven to forty-eight days. The diet is so planned as to avoid augmenting the secretion of gastric juice, to aid easy evacuation of the stomach and to include a sufficient number of calories. The basic diet used was as follows: During the first two weeks the patient was given the whites of from two to four raw eggs. His other meals consisted of gruel of rice and semolina and purée of potatoes, all cooked in water, without salt, and with butter. In addition to this the patient was given 200 Gm. of butter each day. At the beginning of the third week he was given gruel of rice and semolina three times a day, and twice a day potato purée with a little white bread. Each portion consisted of 42 Gm. of dry meal and 6 Gm. of butter for the gruel, and 400 Gm. of potatoes and 6 Gm. of butter for the purée.

Presse Médicale, Paris

38: 1465-1480 (Oct. 29) 1930

*Treatment of Ulcers of Stomach by Injections of Pepsin. M. Loeper, M. Debray, L. Michaux and Sainton.—p. 1465.

Treatment of Ulcers of Stomach by Injections of Pepsin.—Loeper et al. describe a method of treatment for ulcers of the stomach by means of intramuscular injections of pepsin to which sodium benzoate is added to remove the acidity and causticity of the pepsin. They have used this treatment successfully in twenty patients with various kinds of gastric and duodenal ulcers. The exact method is as follows: One cc. of a 10 per cent solution of pepsin is injected first to test the tolerance of the patient. Then injections of 2 cc. of the solution are given daily until a series of fifteen injections has been administered. The treatment is then stopped for three weeks. If the pain recurs during that time a second series of fifteen injections is begun, at the rate of two or three a week. A careful clinical and roentgen examination is given before beginning the treatment and ten days after each series of fifteen injections. In general the injections are not painful and rarely cause unpleasant results, although at times intestinal pain and contraction and diarrheal stools are observed for a few days. The curative effects of the treatment were excellent in all of the twenty cases in which it was employed. The pain and vomiting usually ceased after from four to seven injections. Roentgen examination ten days after the first series of injections showed a cessation of the spasmodic phenomena, ameliorated passage from the stomach to the duodenum, and diminution of the motor syndrome. In all of the twenty cases a complete clinical cure was obtained with one or two series of injections. Although the cases are as yet too recent and too few to be fully conclusive, the authors consider the uniformly successful results obtained sufficiently significant and encouraging to warrant continuing the use of this method of treatment. The cause of the curative effect of pepsin is not yet determined. The authors are inclined to believe, however, that it is due to a hypersensitization to pepsin that exists in persons with ulcer and hyperchlorhydria.

Revue Neurologique, Paris

2: 377-488 (Oct.) 1930

*Revision of Benedikt's Syndrome as an Alternate Form of Syndrome of Red Nucleus. Souques, Crouzon and L. Bertrand.—p. 377.

Revision of Benedikt's Syndrome as an Alternate Form of Syndrome of Red Nucleus.—Souques et al. describe a typical case of Benedikt's syndrome in which the necropsy showed a necrotic lesion affecting the red nucleus exclusively, the pyramidal fasciculus remaining intact. Since the classic definition of Benedikt's syndrome specifies a lesion of the pyramidal fasciculus, the authors were led to consider other examples of his syndrome. In an examination of cases previously reported they observed that, of thirteen cases clinically typical of Benedikt's syndrome with necropsy, lesions of the pyramidal fasciculus were not definitely established in four cases, and in nine cases total or partial destruction of the red nucleus was found. Lesions of the red nucleus produce two different syndromes, a superior or contralateral syndrome and an inferior or alternate syndrome. The alternate syndrome consists of paralysis of the oculomotor nerve on one side and on the other side either hemiasynergia or spontaneous involuntary movements. The alternate syndrome with spontaneous movements corresponds to what is clinically known as Benedikt's syndrome. Examination of numerous reported cases in which the seat of the lesion was established convinced the authors of the frequent occurrence of this syndrome. They feel, therefore, that a revision of Benedikt's syndrome is advisable, which will show that its source lies not in a lesion of the pyramidal fasciculus but of the red nucleus.

Schweizerische medizinische Wochenschrift, Basel

60: 981-1000 (Oct. 18) 1930

*Icterus Catarrhalis Simplex in Infants: Its Etiology. M. Reber.—p. 981.
*Clinical, Epidemic and Prophylactic Relations Between Measles and Whooping Cough. W. Mikulowski.—p. 982.
Inducing Artificial Abortion by Means of Animal Bladder (Baumm's Method). G. B. Giger.—p. 987.
Psychic Disorders After Cranial Traumas: Medicolegal Aspect. O. Riggenbach.—p. 989.
Psycho-Encephalosis. J. S. Galant.—p. 991.
Calcium Therapy in Tuberculosis. M. P. Doorenbos.—p. 994.
Psychologic Factors in Artificial Abortion. G. Bally.—p. 996.
So-Called Oral Sepsis in Daily Practice. H. Wild.—p. 997.
Symptomatic Therapy in Pulmonary Tuberculosis. O. Felsenfeld.—p. 997.

Icterus Catarrhalis Simplex in Infants: Etiology.—Reber reports the clinical history of an infant with catarrhal icterus. The child's parents and one brother were healthy. The birth had been normal and icterus neonatorum had not been observed. During the third month of life the infant developed gastroduodenal disturbances. Vomiting was frequent, the stools were acholic, and the scleras, skin and oral mucous membrane showed icteric discoloration. The infant recovered and it is therefore not likely that the disturbance was caused by congenital malformations of the bile passages. A septic etiology likewise does not appear reasonable, and the typical symptoms of icterus neonatorum or of Winckel's disease were absent. An infectious disease did not precede the icterus, and against Weil's disease was the almost feverless course and the absence of nephritis. The enlargement of the liver was against acute yellow atrophy of the liver, and the acholic stools and the negative family anamnesis made familial hemolytic icterus improbable. Gallstones were not found. Because dyspeptic symptoms were noted during the first stage of the disease, the author thinks that a gastroduodenal catarrh was the primary factor, and icterus followed as a secondary disease. However, this theory does not explain the essential cause of the disease. Because of the rarity of icterus catarrhalis in infants, an individual constitutional disposition might be an etiologic factor. The fact that icterus catarrhalis has been observed in the form of an epidemic, and the observation that a woman and her son, living in the same house with the infant, were also ill with icterus catarrhalis makes it appear probable that an infection was the cause.

Relations Between Measles and Whooping Cough.—Mikulowski found that the statistics, which show the influence of age, of housing and of social and atmospheric conditions on the infectiousness and on the mortality of measles, show much similarity with the statistics on whooping cough. In large cities it was noted that measles epidemics are usually accompanied by whooping cough epidemics. Clinical observations proved that, in children who had had whooping cough, a measles infection generally caused a relapse of the whooping cough or of pulmonary complications. The manifestations of a pertussis focus that has been activated by an infection with measles are noted either during the beginning period of the measles or following recovery from it. If a child with whooping cough develops measles, pulmonary symptoms are sometimes noted during the incubation period. In such instances of exacerbation of whooping cough symptoms during a measles epidemic, the child should be isolated as a measles suspect.

Archivio Italiano di Chirurgia, Bologna

27: 1-108 (Sept.) 1930

Tumors of Breast, with Especial Reference to Precancerigenic Lesions. P. Buonsanti.—p. 1.
Hermaphrodism and Pseudohermaphrodism. A. Odasso.—p. 45.
*Determination of Glycemic Curve in Malignant Tumors, Before and After Surgical Treatment and Radium Therapy. G. Ceruti and F. Benso.—p. 82.
*Amount of Calcium, Magnesium, Potassium, Phosphorus, Sodium and Chlorine in Blood After Cranial Injuries. G. Siciliani.—p. 95.

Glycemic Curve in Malignant Tumors, Before and After Surgical Treatment and Radium Therapy.—From the results of their experiments, Ceruti and Benso state that ten days after surgical intervention and after radium therapy there was an approach and later an actual return to the normal values of the glycemic curve. In the present stage of their experimentation, they cannot yet be sure whether this improvement is transitory or permanent. The authors intend to repeat the determinations of the glycemic curve in the persons with whom they have previously experimented, after the lapse of a longer time since the surgical treatment and the treatment with roentgen rays and with radium, in order to control the accuracy of the foregoing statements.

Calcium, Magnesium, Potassium, Phosphorus, Sodium and Chlorine in Blood After Cranial Injuries.—Siciliani, taking as his point of departure recent scientific observations on the electrolytic equilibrium, which tend to localize the regulatory centers in the thalamic region, instituted experimental researches with a view to studying the behavior of the electrolytic equilibrium following cranial injuries. He reached the conclusion that cranial injuries more or less grave (commotio, fracture of the base) cause a constant but transitory disturbance (at the most, for thirty-six hours) of the electrolytic equilibrium, characterized by a diminution in calcium and an increase in potassium and phosphorus, while the remaining electrolytes behave in an inconstant manner. The hypocalcemia, associated with hyperpotassiemia and hyperphosphemia, was manifested more plainly when the trauma affected the area of the base of the cranium, which strengthens the belief in the existence in that region of regulatory centers of the metabolism of the various electrolytes.

Policlinico, Rome

37: 1513-1548 (Oct. 20) 1930. Practical Section

*Use of Epinephrine by Intratracheal Route in Treatment of Hemoptysis. M. Lucacer.—p. 1513.
Bilateral Subphrenic Abscess and Empyema Due to Splenic Abscess. P. Ferrari.—p. 1514.
Sprue. C. Basile.—p. 1516.

Epinephrine by Intratracheal Route in Treatment of Hemoptysis.—Attention is called to a method of treating hemoptysis, as proposed in 1925 by Giuffrida, consisting in the intratracheal injection of epinephrine, which Lucacer has continued to use with constant success. He has tried the method in fourteen cases, in twelve of which a single injection sufficed to stop the hemoptysis definitively. Of the other two cases, in one four injections and in the other six injections were required, at intervals of twelve hours. He thinks the method should be more widely used.

Riforma Medica, Naples

46: 1461-1500 (Sept. 15) 1930

Chronic Uremia. P. E. Livierato.—p. 1463.
*Gastric Syphilis Simulating Juxtapyloric Ulcer. C. Papp.—p. 1467.
Roentgen Observations in Syndrome Due to Perforation of Esophagus. A. D'Istria.—p. 1470.

Gastric Syphilis Simulating Juxtapyloric Ulcer.—Papp concludes, from his observations in this case of gastric syphilis in a man, aged 42, that tertiary gastric syphilis may develop without characteristic symptoms, simulating other gastric diseases (in this case juxtapyloric ulcer). The only sure diagnostic criterion is recovery as a result of antisyphilitic treatment, which recovery must be demonstrated roentgenologically. The recovery will be more convincing if the serodiagnosis, previously positive, becomes negative after the treatment. Antisyphilitic treatment may be applied with success also in cases which, in view of the signs of stenosis that develop, do not appear to be accessible to any other than surgical treatment.

46: 1537-1572 (Sept. 29) 1930

*Evacuation of Uterus at Will at End of Term. P. Delmas.—p. 1539.
*Renal Factor in Pathogenesis of Edemas (So-Called Extrarenal Edemas) Associated with Heart Disease. G. Pellegrini.—p. 1541.
Disturbances of Electrolytic Equilibrium in Acute Pulmonary Edema Due to Epinephrine. S. Caccuri.—p. 1545.

Evacuation of Uterus at Will at End of Term.—Delmas objects to the charge that his method constitutes a resurrection of forced labor; the maneuvers are all carried out with gentleness and any violence is wrong because it is dangerous. The author divides the application of his method into three stages. A preliminary stage is devoted, in addition to the preparation of the operative region, to the application of spinal anesthesia, his method for this being described in detail. After the application of spinal anesthesia, the intervention proper may be begun. The right hand, closed, is introduced into the vagina, which is rounded out by it. The index finger enters the cervix; if need be, it is extended until it reaches the lower segment, to which it is applied after flexion of the third and the second phalanx. At this point, without violence, but with a sustained balance movement these two phalanges apply an eccentric massage to the cervicosegmental tract, in order to soften it sufficiently to allow the passage of the middle finger beside the index and then later the entrance of the ring finger in addition. The resistance is slowly overcome, and finally it is possible to introduce the little finger alongside the other three fingers. After a period of rest, required sometimes by the changing of hands during the dilation process, the whole hand, closed as a fist, can be passed within the uterine orifice. The fist, which has displaced the head, is then maneuvered in the cervicosegmental tract after the manner of "a key in a lock." After a few transversal movements back and forth, the fist passes alternately from the uterus to the vagina a number of times, until all "limits of separation" have disappeared. Thus the dilation is completed and the contents of the uterus may be evacuated. If the bag of waters has already ruptured, though only a few days previously, it is easy to complete the intervention, either with an application of forceps in case the presentation is unfavorable, or with a version executed by internal maneuvers, which will be easy to accomplish, since the contraction, if there is any, disappears under the action of spinal anesthesia. If the bag of waters is, however, intact or has just ruptured, it is necessary to proceed without delay with the mode of intervention chosen especially if a version is contemplated; otherwise the execution of that maneuver will no longer be possible, owing to the contraction that follows soon the depression of the organ when the fluid has been evacuated. Often the birth is effected promptly—usually spontaneously; but it may be desirable, if the indications are present, to finish with an artificial birth. Intra-uterine injections, the use of sulpharsphenamine, and, in general, prophylaxis of puerperal infection, do not properly belong to the author's technic but may be employed as supplementary aids.

Renal Factor in Pathogenesis of Edemas Associated with Heart Disease.—For the purpose of ascertaining the importance of the renal factor in the pathogenesis of edemas, Pellegrini studied the behavior of the colloidal pressure of the serum and of the water of the blood after introduction of water by the enteral or parenteral route, simultaneously with

modifications of diuresis, in normal persons and also in persons with edemas associated with renal, cardiac and hepatic diseases. The variations in the water of the blood were deduced from the variations in the hemoglobin, as shown by the Bürker hemoglobinometer. The changes in the colloido-osmotic pressure were determined with the aid of the osmometer. The author holds that in water retention due to diseases of the heart, the liver and the kidneys there is a characteristic diminution in the renal capacity to eliminate water; the renal emunctories appear thus to be the regulators of the water balance in the human organism. It is evident that edema, diminution of the osmocolloidal pressure of the blood, and elimination of water through the renal emunctories are elements of a complex system and that if one varies the other two vary, so that it may be regarded now as proved that marked oliguria and notable retention of water are associated with lower osmoticocolloidal pressure.

Archivos Argentinos de Pediatría, Buenos Aires

1: 365-435 (Sept.) 1930. Partial Index

*Chlorosis and Chloro-Anemia in Infants. J. Damianovich.—p. 365.
*Scurvy Due to Dried Milk: Case. E. A. Beretervide and J. H. Reboiras.—p. 393.

Chlorosis and Chloro-Anemia in Infants.—Damianovich made a hematologic study of two groups of infants with chlorosis or chloro-anemia (one group of three triplets with probable congenital syphilis, and four other infants). He concludes that chlorosis and chloro-anemia in infants have a characteristic clinical and hematologic picture which permits their differentiation from other types of anemia. They may be considered as the first stage in the development of alimentary anemia. The principal etiologic factors are congenital syphilis (which acts as the predisposing factor) and a prolonged alimentation with milk (which acts as the determining factor). Congenital syphilis by itself (even if the factor of a prolonged alimentation with an exclusive diet of milk is not superimposed) may cause the disease. Either one or several etiologic factors that modify the blood formula may provoke the onset of the disease. In infants with intractable anorexia in whom the condition may not be determined by clinical examinations, probable changes in the blood formula should be suspected and examinations of the blood should be made. The treatment includes alimentation and medication. The alimentary treatment should be in accordance with the individual case and the age of the infant. All deficiencies should be avoided (the digestion capacity of the infant, however, not being exceeded). In infants aged more than 1 year, liver therapy is advisable. Ultraviolet irradiations should be resorted to as an adjuvant treatment. Vitamins should be provided. The medical treatment should be based on the etiologic data of the individual case, its selection being made among several resources such as hemotherapy with blood of the mother, the administration of iron oxalate, the oral administration of yellow mercurous iodide (if the presence of syphilis is proved) or weak solutions of arsenic salts, in protracted cases.

Scurvy Due to Dried Milk.—Beretervide and Reboiras state that, in the artificial alimentation of infants, freshly boiled cow's milk (recently milked) should be the diet of choice. Commercial preparations and modified formulas of milk give good results only exceptionally. They frequently are the determining factors of more or less grave conditions in infants, especially those related with scurvy. In cases in which artificial alimentation is necessary, if the freshness of the milk is unknown, the authors advise as prophylactic treatment of scurvy the simultaneous administration of proper amounts of orange, lemon or tomato juice. In cases in which scurvy has already developed, all foods that may favor the continuance of the disease should be discontinued and a diet containing freshly boiled milk, carbohydrates and juices of fresh fruits should be given. The authors' patient, aged 9 months (a son of a tuberculous mother) had an inflammatory process in the lower part of the thigh and the upper part of the right leg. The patient received local treatment for several weeks under the belief that it was an articular or para-articular lesion. The clinical, hematologic and roentgen examinations revealed the presence of an unmistakable case of infantile scurvy which proved to be caused by the artificial alimentation instituted from the first month of the patient's life with a commercial preparation of dried milk. With the correction of the diet the patient rapidly improved.

Archivos Españoles de Pediatría, Madrid

14: 513-576 (Sept.) 1930

Diagnosis of Chronic Splenomegaly in Infants. F. Zamarriego.—p. 513.
*Treatment of Bronchial Asthma in Children. S. Morales González and J. Palma Varo.—p. 545.

Treatment of Bronchial Asthma in Children.—Morales González and Palma Varo consider of great importance the treatment of asthma during the intervals of the attacks by controlling the underlying causes of the disease. Five types of asthma, in accordance with the etiologic factor of the disease, are considered. The proper treatment for each type (including the diet, practice of hygiene, regulations for sports and amusements of the patients and indications in case of intolerance to certain drugs) is given. In the first type of asthma (association of asthma with neuro-arthritic diseases) the treatment includes certain forms of hydrotherapy, climatotherapy and the administration of iodine compounds, preferably potassium iodide. The second type of asthma (association of asthma with diseases of the respiratory tract) comprises three different groups, according to whether the asthma is associated with tracheobronchial adenopathy, with chronic bronchitis or with pulmonary tuberculosis. In the first and the second group, roentgen therapy gives satisfactory results. Its mechanism is explained by the reduction which the enlarged tracheobronchial lymph nodes undergo under the influence of roentgen irradiations, thus stopping the irritative action of the enlarged lymph nodes on the branches of the vagus nerve, which determine the bronchial spasm. The authors state that this fact is proved by the reducing action that roentgen rays have on the lymphatic system. The opinions are conflicting with regard to the association of asthma and tuberculosis (third group of the second type). However, an asthmatic patient with a positive Pirquet reaction should be treated with tuberculin. Patients of this group with proved tuberculosis should receive arsenical treatment. The third type of asthma (association of asthma with either gastro-intestinal or hepatic disturbances) comprises also two groups. In the first group (association of asthma with gastro-intestinal disturbances) the treatment should be directed as the textbooks on diseases of children advise in similar cases. Patients of the second group of the same type (association of asthma with hepatic disturbances) as a rule belong to either the group of asthma caused by anaphylaxis or by arthritism and hence the treatment should be that used in these conditions. In the fourth type of asthma (association of asthma with spasmophilia) calcium therapy and actinotherapy yield good results. In asthma caused by anaphylaxis (fifth type) the treatment should be that of desensitization by means of peptone therapy, the use of entero-antigen, or roentgen irradiation of the spleen. In the treatment of the anaphylactic form of asthma, vaccination with bacteria taken from the respiratory tract, surgery (vagotomy or sympathectomy) or the confinement of the patients in allergen-free chambers have not given satisfactory results.

Deutsche medizinische Wochenschrift, Berlin

56: 1813-1854 (Oct. 24) 1930

*Brucella Abortus Infection and Splenomegaly. H. Schottmüller.—p. 1813.
Lead Poisoning Caused by Drinking Water. Kruse and M. Fischer.—p. 1814.
Clinical Aspects of Hypophyseal Cachexia. F. Boenheim and F. Heimann.—p. 1818.
Value of Medicaments Employed to Induce Labor. W. Reiprich.—p. 1820.
*Grünfelder's Toe Reflex: A New Symptom of Otitis Media During Childhood. H. Rothe.—p. 1822.
Lymphogranuloma Inguinale. L. Kleeberg and L. Loewenstein.—p. 1824.
Portable Substitute for Diathermy Apparatus for Simultaneous Administration of Light and Heat in Treatment of Inflammations of Seminal Vesicles and Prostate. H. Schmutte.—p. 1826.

Brucella Abortus Infection and Splenomegaly.—Schottmüller describes the case of a man who for several months had had fever and other symptoms of disease. Examination revealed an enormous enlargement of the spleen. The liver was likewise somewhat enlarged and the bilirubin content of the blood serum was increased. Because an enlargement of the spleen had been noted before in a case of *Brucella abortus* infection, this infection was thought of, and the serum agglu-

tination of *B. abortus* confirmed the diagnosis. The fever disappeared several days after the patient had come to the hospital; however, the enlargement of the spleen subsided slowly. The author stresses that in splenomegaly the possibility of a *B. abortus* infection should not be overlooked. Regarding the pathogenesis of *B. abortus* infection, he states that nothing definite is known as yet; but he assumes that the bacilli lodge first in the mesenteric lymph nodes. By way of the thoracic duct they are then brought into the blood stream and by way of the portal vein they also enter the liver and spleen. To cultivate the bacilli from the blood is difficult. Reduction in the oxygen content of the air seems to be necessary. The cultivation of the bacilli from the blood stream is of diagnostic value especially in the beginning stage of the disease before the agglutination becomes positive. The author is convinced that *B. abortus* infection differs from the so-called Malta fever, which is caused by *B. melitensis*. In cases of Malta fever the pathogenic organism can be cultivated from the venous blood without difficulty. The differentiation of the two organisms is possible because in cultivating *B. abortus* the atmospheric oxygen pressure checks the growth, whereas the pathogenic organism of Malta fever can be cultivated without reducing the oxygen pressure. With regard to the terminology, it is stated that the term undulant fever is not advisable because the type of fever is not pathognomonic for this infection and may be found in other infectious diseases. It is best to name the disease after the pathogenic organism. It is also pointed out that in some cases in which the anamnesis and symptomatology indicate *B. abortus* infection the agglutination remains negative. The nosologic position of such conditions is not entirely clear as yet. With regard to the treatment of *B. abortus* infection the author is skeptical. He does not consider arsphenamine, methenamine, quinine, salicylates or other preparations effective. In a disease the length of which varies between a few weeks and many months, it is difficult to decide whether a remedy is effective or not. It has been noted, however, that the fever can be counteracted by the administration of amidopyrine. In the last part of the article the necessity of a prophylaxis of *B. abortus* infection is stressed, and immunization of cattle by means of dead cultures of the bacillus are recommended.

Grünfelder's Toe Reflex: New Symptom of Otitis Media During Childhood.—Rothe discusses a toe reflex which according to Grünfelder has diagnostic significance in otitis media, especially in children. It consists of a Babinski-like dorsal flexion of the great toe and a fanlike spreading of the other toes. It can be produced by pressure on a certain point of the occiput. Grünfelder localized this point in the depression on the occiput where the lambdoid suture, the occipitomastoid suture, and the parietomastoid suture intersect. He stated that in the child with otitis media the toe phenomenon manifests itself contralaterally, whereas in a child without disturbances of the ear it occurs on the same side. The author studied Grünfelder's toe reflex in 150 children with ear diseases and in the same number without ear diseases. She reports the results of these tests and concludes that in acute otitis media without perforation the reflex is nearly always positive. In children with discharging ears it is less frequent, but if it does occur it seems to indicate an involvement of the bone. The reflex shows various forms and is not always readily recognized. However, after the diagnostician has acquired a certain experience it is a valuable aid in recognizing otitis media, the diagnosis of which is often difficult, especially in small children.

Deutsche Zeitschrift für Chirurgie, Leipzig

228: 1-330 (Sept.) 1930

Clinical Observations and Investigations of Disturbances in Coagulation Time of Blood. M. Kappis and E. Mackuth.—p. 1.
Abnormal Development of Peritoneum (Ligamentum Cystocolicum) as Cause of Pathologic States of the Gallbladder (Intermittent Bile Stasis) and Duodenum (Stenosis). G. E. Konjetzny.—p. 28.
*Treatment of Chronic Ulcer of Stomach and Duodenum: Indications for Surgical Intervention. R. Wanke.—p. 41.
Inflammatory Strictures of Rectum: Surgical Treatment. Schreiner-Bienert.—p. 105.
*Fate of Cryptorchid: I. Growth of Ectopic Testis After Reposition. M. Grauhan.—p. 142.
Infectious Spondylitis. H. Puhl.—p. 172.
Basal Metabolism in Fibrous Osteodystrophy. R. Wanke.—p. 210.
Anatomic Alterations in Hip Joint of Hemophiliacs. Löhr.—p. 234.
Growth of Neck of Femur in Cases of So-Called Coxa Valga with Weight Bearing. K. Lindemann.—p. 249.
Pathology of Patella of Child. C. Mau.—p. 261.
Typical Injuries of Knee of Cyclists. O. H. Petersen.—p. 277.
Surgical Treatment of Congenital Defects of Tibia and Fibula. H. Lubinus.—p. 281.
Surgical Treatment of Dislocation Fracture of Ankle Joint. A. Beck.—p. 289.
Etiology of Tuberculosis of Kidney. Portwich.—p. 296.
Operation for Coral Calculus in Both Kidneys. H. Schüssler.—p. 307.
Surgical Treatment of Chronic Sciaticas. E. W. Baum.—p. 312.
*Treatment of Thrombosis of Veins by Means of Adhesive Plaster Bandages. M. Kappis.—p. 317.
Aneurysm in Case of Endocarditis Lenta. W. Siemens.—p. 326.

Treatment of Gastric and Duodenal Ulcer.—Wanke discusses at length the etiology, diagnosis and treatment of these ulcers and concludes his paper by saying that, if the roentgen examination fails to disclose a gastric ulcer, operation is contraindicated. Operation should not be performed until the patient has been ill for at least three years, provided carcinoma can be ruled out, because up to three years a satisfactory recovery may be expected without operation. Chronic gastric and duodenal ulcers should be regarded as being evidence of inflammation.

Fate of the Cryptorchid.—Grauhan has studied the growth of the testis in fifty-eight cases of cryptorchidism in which reposition of the organ was done. In about two thirds of the cases such development was definitely determined. It was based on a histologic study, the criteria being that in the unilateral cases 40 per cent and in the bilateral cases 20 per cent of the tissues of the testis must have developed to maturity, according to the age of the patient.

Treatment of Venous Thrombosis with Adhesive Plaster Bandages.—The results obtained with this treatment in 100 cases are reported by Kappis. The bandage extends from the toes to the groin, the knee usually being left free until the patient stands up, so that motion is not entirely prevented. The idea is to provide sufficient compression without discomfort. The dressing is applied as soon as thrombosis is suspected. Pain is the symptom that is regarded as being indicative of when to apply the dressing. If it is applied properly, pain immediately disappears. The patient may be up and about. In this group of 100 cases, only 13 patients developed lung infarcts and 5 died from embolism. In only two of the latter cases could the dressing be charged with the result, and in these cases it was not applied properly. Kappis says that, when the dressing is applied at the first evidence of pain in the foot or calf, thrombosis is invariably checked. If the thrombosis is fully developed before the dressing is applied, the subjective and objective effect is always good. As a rule pain ceases inside a few hours. If it does not, then the dressing should be examined carefully because, in all probability, it is not applied properly. The swelling disappears within a few days. Then it may be necessary to apply a new dressing, if one is needed, which is usually not the case. It is not essential that adhesive plaster be used. Any material that accomplishes a satisfactory compression such as adhesive plaster, may be employed.

Klinische Wochenschrift, Berlin

9: 1897-1944 (Oct. 11) 1930

Growth According to Constant Proportions. W. Frey.—p. 1897.
Biology of Spermatozoa in Male Genitalia. T. von Lanz.—p. 1899.
Functional Test of Circulation by Measuring Heart Action. H. W. Bansi and G. Groscurth.—p. 1902.
Cerebral Immunization Against Diphtheria Toxin. U. Friedemann and A. Elkeles.—p. 1907.
Significance of Elastin in Icterus. F. Rosenthal.—p. 1909.
*Iodine Deficiency and Etiology of Goiter. C. A. Hellwig.—p. 1913.
Methylglyoxal as Intermediate Product in Decomposition of Carbohydrates. E. Schneider and E. Widmann.—p. 1916.
Habituation to Intoxicating Poisons and Its Effect on Position Maintained by Forward Stretched Arms. L. Gatzuk and H. Hoff.—p. 1917.

Iodine Deficiency and Etiology of Goiter.—Hellwig points out that the theory in which goiter is considered as a result of iodine deficiency is considered by many as a proved fact. However, he mentions other investigators, who have questioned this theory. Liek, for instance, who made his observations on the people inhabiting the delta of the Vistula, challenged the iodine deficiency theory with the following facts: 1. The foods eaten in this territory contain from eight to ten

times as much iodine as is usually considered the normal amount, and in spite of this goiter occurs. 2. Since the war there has been an increase in goiter cases, although the iodine supply is about the same. 3. In this territory iodine is not used to counteract goiter. Chemical investigations by Oswald proved that in spite of a low iodine content in air, food and water the thyroids of mountaineers are capable of resorbing large quantities of iodine. He found even in the goiter regions strumas with a relatively increased iodine content. But although these epidemiologic and chemical facts make the iodine deficiency theory appear less plausible, animal experiments seemed to corroborate it in that hyperplasia of the thyroid was produced in rats by means of an iodine deficient diet. Against the conclusiveness of these animal experiments it can only be said that they were made in an outspoken goiter territory, and it is known that domesticated animals in such regions may develop hypertrophy of the thyroid even if the food is not specially selected for its iodine deficiency. The author then reports animal experiments, which he himself conducted. He found that deficiency in iodine does not produce hyperplasia but rather atrophy of the thyroid. He is not convinced that endemic goiter is due to a lack of iodine, and points out that recent investigations on the etiology of goiter have given indications that a high lime content of the drinking water is one of the main factors in the etiology of goiter. It was found that, in localities in which goiter was most frequent, the drinking water came from lime formations. In animal experiments the largest goiters were produced when, besides an iodine deficient food, lime water was given. The author comes to the conclusion that goiter is not caused by one specific factor but rather by several factors which either overtax the thyroid functionally and cause formation of additional secreting elements (struma parenchymatosa) or which by simultaneously increased iodine content cause also a more profuse secretion (diffuse colloid struma). The author's animal experiments in a region free from goiter indicate that an oversupply of lime may be one of the etiologic factors of goiter.

9: 1945-1992 (Oct. 18) 1930

Newer Theories Regarding Sympathetic Ophthalmia. K. Velhagen, Jr. —p. 1945.
Biologic Effects of Light. A. Gigon.—p. 1947.
*Icterus Neonatorum Gravis. H. Kleinschmidt.—p. 1951.
Acid-Base Equilibrium in Gastric and Duodenal Ulcers. F. Reiche and F. Fretwurst.—p. 1954.
Hereditary Transmission of Factors M and N of Landsteiner and Levine. F. Schiff.—p. 1956.
Ten Years' Experiences with Friedmann Tuberculosis Remedy. A. Marberger.—p. 1959.
Symptomatology and Metabolic Pathology of Erythremia. A. and H. Reinwein.—p. 1964.
Microdetermination of Nitrogen Containing Substances in Urine. L. Pincussen.—p. 1966.

Icterus Neonatorum Gravis.—As icterus neonatorum gravis Kleinschmidt designates a disturbance which is often familial and which frequently causes death within a few days. Spontaneous recovery is rare. A differentiation from other severe forms of icterus that develop in the new-born is possible on the basis of the morphologic blood picture, which is characterized by an erythroblastosis. The presence of large amounts of hematin in the blood serum and a siderosis of the different organs indicate toxic disintegration of the blood. Early blood transfusion is helpful in counteracting the severe symptoms and may make a cure possible.

9: 1993-2040 (Oct. 25) 1930

Circulatory Weakness in Infectious Diseases. F. Lewy.—p. 1993.
Coma in Patients with Thyrotoxicosis. H. Zondek.—p. 1999.
Demonstration of Group Specific A Factors in Body Fluids. H. Sachs. —p. 2002.
Biologic Test for Corpus Luteum Hormone. C. Clauberg.—p. 2004.
Tic During Childhood. C. Boenheim.—p. 2005.
Disturbances in Water Elimination During Morphine Withdrawal and How it May Be Influenced by Theophylline Ethylenediamine. A. Adler.—p. 2011.
*Agranulocytic Syndrome in Infections. K. Landé.—p. 2015.
*Pathogenesis and Therapy of Trichomonas Colpitis. E. W. Winter. —p. 2017.
Gravimetric Method for Determination of Cholesterol. O. Mühlbock and C. Kaufmann.—p. 2019.

Agranulocytic Syndrome in Infections.—Landé gives the clinical histories of five patients. In two instances an agranulocytic syndrome developed in the course of a polyarthritis infectiosa. In a child with febrile infectious arthritis the granulocytes disappeared almost entirely and a temporary lymphomonocytic reaction was noted. In a fourth patient there developed a syndrome which was finally recognized as an aplastic anemia. These four cases have in common the development of the changes in the blood on the basis of a chronic septic process. The infection injures the blood-forming apparatus and causes either the disappearance of granulocytes or severe anemia. In the fifth case described by the author the typical symptoms of agranulocytosis developed gradually. It cannot be definitely determined whether in this case the clinical development was entirely different, namely, that it was due to a disturbance in the leukopoietic apparatus with secondary formation of necroses.

Pathogenesis and Therapy of Trichomonas Colpitis.—Winter asserts that in trichomonas colpitis the discharge is usually yellowish and foamy, and the vaginal mucous membrane is red, inflamed and swollen. In most cases the diagnosis can be verified by microscopic examination of the vaginal secretion while it is still warm. However, the physician should not only verify the diagnosis but also investigate the etiology. Among the patients with trichomonas colpitis who came under the author's observation, 50 per cent had, besides the trichomonas colpitis, no other genital disturbance. In the other 50 per cent colpitis was a complication of such conditions as parametritis, tumors of the adnexa, renal disturbances, preclimacteric hemorrhages, perineal tears, appendicitis, syphilitic infections and menstrual anomalies. Of the women with trichomonas colpitis in whom there existed no other genital disorders, many had an asthenic habitus, others had hyperthyroidism, some were of the pyknic type and others had either hypothyroidism, chlorosis or dystrophia adiposogenitalis with acromegaly. Only 30 per cent were normal. The fact that such a large percentage of the women with trichomonas colpitis have constitutional anomalies seems to indicate that the constitution has a certain influence on the pathogenic factors. The micro-organisms are generally the primary factor. On a healthy mucous membrane they have no injurious effect. However, if the vaginal mucous membrane has been unfavorably influenced by disease of the uterus or of the uterine adnexa, by perineal tears or by inferior constitutional conditions, the mucous membrane cannot overcome the injurious effects, and in such cases a severe colpitis develops and trichomonads are generally found. However, it cannot be asserted that the trichomonads are the primary cause. With regard to the therapy the author says that the first aim should be to remove the trichomonads. He has had good results with oxyquinolin sulphate. It is employed for irrigation in the form of aqueous solutions 1:1,000 and in the form of vaginal suppositories. Two irrigations should be made during the day and a suppository should be introduced in the evening. This therapy not only eliminates the trichomonads but also stimulates the resistance power of the vaginal mucous membrane, so that now the changes in the wall of the vagina can be counteracted and the normal vaginal flora can be reestablished.

Medizinische Klinik, Berlin

26: 1545-1582 (Oct. 17) 1930

Value of Irradiation in Gynecology. F. Heimann.—p. 1545.
Diagnosis of Malignant Tumors of Uterus. W. Benthin.—p. 1550. C'td.
Echinococcus of Orbit. J. Kubik.—p. 1554.
*Operative Treatment of Male Sterility. J. J. Stutzin.—p. 1556.
*Clinical Diagnosis of Syphilis of Stomach. H. Baumecker.—p. 1557.
*Resistance Against Poisoning with Metallic Salts Increased by Vitamin D. H. Hoff.—p. 1560.
Malaria-Like, Painless Form of Cholelithiasis. N. Ortner.—p. 1562.
Serologic Demonstration of Syphilis. G. Blumenthal.—p. 1563.

Operative Treatment of Male Sterility.—Stutzin asserts that in the majority of cases male sterility is caused by a bilateral epididymitis. The preceding urethritis does not necessarily have to be of a gonorrheal nature. Every inflammation of the urethra may lead to epididymitis and may obstruct the passage of the spermatozoa toward the vas deferens, and toward the urethra, by formation of cicatricial indurations. Aside from war injuries trauma is rarely the cause of male sterility. However, in operations on scrotal hernias the spermatic duct is sometimes injured. Forced irrigations, dilation and especially massage of the prostate often spread infective material and thus may also cause epididymitis. In some patients with azoospermia,

spermatozoa can be found in the testis but not in the seminal fluid. Accordingly it seems reasonable to attempt to counteract this form of male sterility by an operation. The difficulties in this operation are due to the narrowness of the spermatic duct and to the danger of stricture formation. Moreover, even after the anastomosis has been completed it is still questionable whether the spermatozoa will really follow the new duct. American authors report favorable results in about 50 per cent of the cases. With regard to the technic of the operation, the author states that he employed a modification of the MacKenna-Moran method. The operation is performed under local anesthesia, and especial care is necessary so as not to injure the nervous tissues. Before attempting such an operation the surgeon should acquire skill in animal experiments. But, if the technic is thoroughly mastered, an attempt may be made to overcome male sterility by this method.

Clinical Diagnosis of Syphilis of Stomach.—Baumecker's discussion on the clinical diagnosis of syphilis of the stomach is summed up as follows: The previous history reveals syphilis, positive Wassermann reaction and steadily increasing gastric disorders, and sometimes other abdominal organs are involved. The clinical examination shows the following: 1. Cachexia that is comparatively mild compared to the severity of the gastric disturbances. Occasionally a tumor is palpable and the patients are often young persons. 2. The chemism of the stomach is not characteristic, but in most cases anacidity is noted. 3. Roentgenoscopy reveals microgastria, rigidity, shrinking and sometimes a defect in the filling. 4. Gastroscopy shows a rigid, shrunken stomach, also gummas and atrophy of the mucous membrane. 5. Exploratory laparotomy reveals a diffuse sclerosis of the wall of the stomach. 6. Microscopic examination of excised tissues permits a differentiation from a tumor, shows typical changes in the submucosa, and *Spirochaeta pallida* can be demonstrated. The diagnosis ex juvantibus is not advisable and should be resorted to only when no other way is possible, because, if there is no therapeutic effect, it might cause complications.

Resistance Against Poisoning with Metallic Salts Increased by Vitamin D.—Hoff asserts that in former investigations it had been proved that chronic poisoning with vitamin D leads to severe cerebral disturbances. The animal experiments reported in this article were made to determine the functional disturbances in the cerebral cell, which are the underlying causes of these changes. On the basis of his experiments the author reaches the following conclusions: 1. The administration of large doses of vitamin D increases the resistance of the nervous system against poisoning with metallic salts. It does not matter in what manner the metallic salts are introduced into the organism. 2. If the animals are given food with deficient vitamin D content, the resistance against the metallic poisons is reduced. 3. The administration of theophylline or of alcohol nullifies the increased resistance that had been produced by giving large doses of vitamin D. From this it may be inferred that the cell membrane acquires the increased resistance. 4. The increased resistance of the cell membrane in the severe forms of vitamin D poisoning causes the cell to be shut off from the nutritional substances and thus injures the cell.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

86: 175-252 (Oct.) 1930

*Placenta Praevia: Treatment. R. Kessler.—p. 175.
*Eclampsia: Oxidation Power of Blood. W. Haupt, H. Goecke and J. Loevenich.—p. 185.
*Resection of Coccyx During Labor. A. Niedermeyer.—p. 190.
Hiatus Vaginae: Case. H. Sellheim.—p. 197.
Psychogenic Gynecologic Disturbances. F. Kirstein.—p. 203.
Pathology of the New-Born. E. Sonnenfeld.—p. 210.
Microscopic Changes in Gynecologic Cases. E. Mathias.—p. 218.

Placenta Praevia: Treatment.—In 107 cases of placenta praevia observed by Kessler, symptomatic treatment was used 51 times and surgical treatment 56 times. The total maternal mortality was 4.7 per cent (three deaths from hemorrhage, one from glomerulonephritis and one from eclampsia). In three of the five fatal cases, symptomatic treatment was used and in two operation was performed. When the case of severe eclampsia is subtracted, the maternal mortality following abdominal cesarean section was 0. The total fetal mortality was 25 per cent but here also the mortality was 0 in the cases in which abdominal cesarean section was performed while the fetus was still alive. Emphasis is laid on the fact that there is not a routine treatment for placenta praevia and that all patients with this condition should be taken to a hospital as soon as possible following the first hemorrhage and before an internal examination is made.

Eclampsia: Oxidation Power of Blood.—Haupt et al. repeated the experiments of Rodenacker with regard to the oxidase action of the blood of eclamptic women. Like him they found a lower value in eclamptic women than in normal gravidas but the results were inconstant and the authors believe that Rodenacker's method should be modified.

Resection of Coccyx During Labor.—Niedermeyer reports the case of a primipara, aged 31, in whom dystocia and exhaustion of the mother necessitated the use of forceps. When the internal examination was made it was found that the sagittal suture was in the anteroposterior diameter. A large caput succedaneum was present and the fontanels were not distinguishable. The tip of the coccyx projected forward and was of extreme hardness. Under anesthesia an attempt was made to deliver the child with forceps but the head did not descend, even when strong traction was exerted. It was felt that the head was arrested on the floor of the pelvis by the markedly ossified tip of the coccyx. Therefore about 4 cm. of the completely ankylosed end of the coccyx was resected. The forceps were reapplied and the delivery of the child was accomplished with great ease.

Münchener medizinische Wochenschrift, Munich

77: 1789-1828 (Oct. 17) 1930

*Diagnosis and Treatment of Coronary Thrombosis. M. Hochrein.—p. 1789.
*Circulatory Disturbances of Obese Persons. I. von Zárday.—p. 1793.
Autohemagglutination in Vitro Under Influence of Tuberculin. M. M. Altschuler.—p. 1796.
Results of Active Diphtheria Immunization with Toxin-Antitoxin Floccules (According to H. Schmidt). F. Gebert.—p. 1798.
*Late Results After Resection of Stomach on Account of Gastric and Duodenal Ulcers. A. Oberniedermayr.—p. 1799.
Antirachitic Value of Irradiated Flour and Irradiated Farina. L. Schwarz and F. Sieke.—p. 1801.

Diagnosis and Treatment of Coronary Thrombosis.—In discussing the diagnosis, Hochrein stresses that the electrocardiographic changes should not be overestimated. He found that the changes designated as the coronary T are not observed in all instances, and that this change develops in many cases only after several weeks. He considers this deformation as a sign of a functional anomaly and not as a sign of a localized morphologic change. The diagnosis of coronary thrombosis should be based on the clinical symptoms, which become manifest in two different stages. The first phase is characterized by the circulatory shock and the second by cardiac weakness. Differential diagnostic difficulties exist only in regard to angina pectoris. In the latter condition the pains are generally of a shorter duration. The blood pressure and the electrocardiogram are usually unchanged in angina pectoris. With regard to the therapy, the author states that the severe pains during the attack generally necessitate the administration of morphine. Nitrites, which are helpful in angina pectoris, are not advisable in coronary thrombosis. It is necessary to administer preparations that will increase the tonus of the vessels and dilate the cardiac capillaries. The author obtained favorable results with a derivative of epinephrine that has the advantages of a prolonged action and a decreased toxicity. During the attack the preparation was administered intramuscularly and later orally. In order to prevent acute heart failure from auricular fibrillation, a quinidine preparation is given. For stimulation of the peripheral circulation, massage is advisable. Inhalation of oxygen is also helpful. After the shock has been counteracted, the cardiac weakness must be treated. Digitalis and strophanthin are indicated and the administration of the epinephrine and the quinidine preparations should be continued. In combination with cardiac stimulants, dextrose injections are advisable. Because coronary thrombosis generally develops on the basis of an atherosclerosis, the principles applying to the treatment of this condition should receive attention; that is, nicotine

and alcohol should be avoided, also bodily exertions and psychic excitement, and the diet should be watched carefully.

Circulatory Disturbances of Obese Persons.—Von Zárday examined 160 obese persons who were free from a primary circulatory disturbance and found that about 90 per cent had disturbances in the circulatory apparatus. Hence, in treating obesity it is necessary to consider the condition of the circulation.

Results After Resection of Stomach for Gastric and Duodenal Ulcers.—Oberniedermayr inquired of the 212 patients, who during the last eight years had undergone operative treatment for gastric or duodenal ulcers, regarding their present condition. Some of the patients who were not entirely satisfied were given a roentgen examination. The author gives a tabular report which indicates that in nearly 90 per cent of the cases the late results of the operative treatment were satisfactory. In 2.4 per cent of the cases the roentgen control gave indications of a peptic ulcer. The author directs especial attention to the palliative antrum resection according to either Madlener's or Finsterer's method. On the basis of his experiences he recommends this palliative operation for a nonresectable duodenal ulcer as well as for an ulcer in the upper portion of the stomach.

Wiener klinische Wochenschrift, Vienna

43: 1273-1300 (Oct. 16) 1930

*Pathogenesis and Therapy of Senile Asthma. A. Müller-Deham.—p. 1273.
*Experiences with Intravenous Pyelography. R. Chwalla.—p. 1276.
Leucine and Tyrosine in Urine of Patients with Pulmonary Tumors. H. Asperger.—p. 1281.
Intraperitoneal Anesthesia. D. Thursz.—p. 1284.
Secondary and Injurious Effects of Arsphenamine Preparations. E. Brezovsky.—p. 1285.
Irradiation in Treatment of Tuberculosis of Skin. H. Fuhs.—p. 1287.

Pathogenesis and Therapy of Senile Asthma.—Müller-Deham reports experimental studies on the pathogenesis and therapy of senile asthma. He points out that asthma-like dyspnea is one of the most common forms of dyspnea in senility. It is also demonstrated that the clinical aspects as well as the therapy of senile asthma are almost identical with those of bronchial asthma. Because the latter condition is today considered by many as the reaction of an allergic condition, the author made cutaneous tests with various allergens on thirteen patients with senile asthma and on twenty-five aged persons without asthma. It was found that all the cases with senile asthma, and also a large percentage of the control cases, gave a positive reaction against mildew and against sputum bacteria. This shows that it is not probable that these allergic reactions indicate the essential cause of the senile asthma. Nevertheless the allergens were employed in the therapy, and a considerable improvement was observed in the majority of cases. Whether this form of treatment should be considered specific or nonspecific cannot be definitely determined as yet.

Experiences with Intravenous Pyelography.—Chwalla first reviews the history of intravenous pyelography and discusses the two most commonly employed contrast mediums. He considers iopax (sodium 2-oxo-5-iodo-pyridine-N-acetate) as the best contrast medium for intravenous pyelography. He employed it in fifty cases. Besides a slight sensation of heat, which may be counteracted by applying a cold compress to the forehead, there are no marked secondary effects. Occasionally there are slight pains along the vein, headache and thirst, but severe complications do not become manifest. The author thinks that in many cases intravenous pyelography cannot entirely replace direct pyelography. However, in those disturbances in which the elimination of urine from the kidney is retarded the intravenous method is valuable and in these cases may replace the direct method. Especially suited for intravenous pyelography are the cases in which cystoscopy and ureter catherization are not possible. However, to employ it indiscriminately and to make it the only basis for operative indication is not advisable. The method represents a great progress because it is more than a mere roentgen visualization of the anatomic conditions of the upper urinary passages; it is also a functional test.

43: 1301-1332 (Oct. 23) 1930

Pathology of Liver. O. Weltmann.—p. 1301.
Injuries in Skiing. P. Moritsch and Rummelhardt.—p. 1306.
Tuberculosis of Infants. S. Feilendorf.—p. 1311. C'td.
Bromine Poisoning Simulating Typhoid. H. Mayrhofer and A. Fessler.—p. 1315.
*Diphtheria Prophylaxis by Means of Löwenstein's Ointment. M. Stransky.—p. 1316.
Device for Transportation of Mélangeurs. A. Pölzl.—p. 1317.
Prognostic Significance of Carotid-Sinus Reflex (Vagus Pressure Reflex). J. Flesch.—p. 1318.
Diagnosis and Treatment of Cancer of Cervix Uteri. L. Adler.—p. 1318.
Treatment of Tuberculosis of Male Genitalia. V. Blum.—p. 1320.

Diphtheria Prophylaxis by Means of Löwenstein's Ointment.—Stransky first enumerates the disadvantages of immunization against diphtheria by means of injections. Because of the dangers involved in these injection methods he himself employed Löwenstein's prophylactic ointment, which contains diphtheria bacilli that have been detoxicated by formaldehyde solution. In Vienna about 10,000 children were immunized against diphtheria by means of inunctions with Löwenstein's ointment. On the basis of his observations the author comes to the conclusion that Löwenstein's ointment is an effective prophylactic against diphtheria. The main advantages are its harmlessness, its simple technic and especially its effectiveness.

Zentralblatt für Gynäkologie, Leipzig

54: 2497-2560 (Oct. 4) 1930

Obliteration of Parenchyma of Kidney by Means of Roentgen Rays in Patients with Ureterovaginal Fistulas. K. Heim and F. Klink.—p. 2498.
Pyelography by Means of Intravenous Injection of Contrast Medium: Its Significance in Diagnosis of Complicated Gynecologic-Urologic Cases. B. Ottow.—p. 2508.
*Permanent Results of Implantation of Ureter into Bladder. W. Stoeckel.—p. 2517.
Urologic Diseases Simulating Gynecologic Disorders. H. Küstner.—p. 2521.
*Treatment of Postoperative Retention of Urine. E. Kottlors.—p. 2530.
Modification of Episioclisia Operation. B. N. Wassilieff.—p. 2536.
*Traumatic Injury During Coitus in Gynatresia. A. Schepetinsky.—p. 2539.

Permanent Results of Implantation of Ureter into Bladder.—Stoeckel stresses that a satisfactory functioning of the implanted ureter and of its kidney has to be demonstrated before the operation can be considered successful. He points out that the final results may be unsatisfactory because of a stricture at the site of the suture, and that it has to be determined whether and how the valvular and the closure mechanisms of the normal ureteral orifice should be replaced in the implanted ureter. He also considers the possibility of reflux of the bladder content into the implanted ureter, which in turn may cause an ascending infection. After reviewing two methods of implantation the author describes the clinical history of a woman, aged 36, in whom the left ureter had been implanted on account of a ureteral fistula. After the operation the patient made no complaints, but when a control test was made four years later reflux into the implanted ureter was noted. In spite of this the patient felt well. However, there is a possibility that the reflux gradually increases and then it might impair the functioning of the kidney. The author considers the implantation of the ureter a valuable therapeutic method, but he stresses that shortcomings should be investigated and, if possible, overcome. It is particularly important to prevent reflux. The case reported proves that it is essential that the implantation of the ureters be followed by regular control tests in the form of cystography and of pyelography by means of intravenous injection of the contrast medium.

Treatment of Postoperative Retention of Urine.—In the first part of the article, Kottlors shows that methenamine and other remedies that have been employed in recent years for the treatment of postoperative retention of urine fail in many cases. In discussing the pathogenesis of retention of urine he shows that, because of the psychic factor, suggestion is often helpful. But the spasm of the sphincter, which is due to an abnormally increased nervous impulse, is the main pathologic factor. A causal therapy should therefore strive to overcome the hyperirritability of the bladder. Among the pharmaceutic preparations that have an elective effect on the sensory apparatus are cocaine and several of its synthetic substitutes, especially procaine hydrochloride. It was possible to counteract retention of urine by the rectal infusion of 50 cc. of a 2 per cent solution of procaine hydrochloride. However, if only the surface of the

rectal mucous membrane is anesthetized there is no effect. The micturition effected by the administration of procaine hydrochloride is therefore not a reflex action but is due to the resorptive capacity of the intestinal mucous membrane. The author employed this treatment in thirty-one cases, and in twenty-six cases it was effective.

Traumatic Injury of Urethra During Coitus in Gynatresia.—Schepetinsky describes the case of a girl, aged 23. When the patient arrived at the hospital, profuse genital hemorrhage was noted and micturition caused a burning pain. The anamnesis revealed that three hours before, the patient had been attacked and raped by an intoxicated man. During the sexual act the patient felt an intense pain and hemorrhage followed. She had never menstruated. Vagina and uterus were absent. The urethra was abnormally wide, passable for two fingers. On the posterior wall there was a bleeding rupture 3 or 4 cm. in length. Rest in bed, dietary treatment, and administration of procaine hydrochloride reduced the temperature and checked the hemorrhage. The urethra contained large quantities of pus. On account of the acute gonorrhea, the operation had to be postponed.

Voprosy Onkologii, Kharkov

3: 111-222, 1930

Effect of Chronic Mechanical Irritation on Development of Experimental Sarcoma. L. F. Larionov.—p. 114.
Effect of Extracts of Endocrine Glands on Growth of Malignant Tumors. I. P. Mischenko, M. M. Fomenko and L. S. Burnaz.—p. 120.
Folliculoma: Two Cases. V. Lissovetsky.—p. 123.
Genesis of Hypernephroma. D. Galperin.—p. 138.
Nodular Infiltration of Intestine of Type of Idiopathic Sarcoma of Kaposi: Case. R. G. Shik.—p. 147.
*Effect of Roentgen Rays on Inorganic Phosphorus Content of Blood and Urine of Patients with Carcinoma. F. I. Rivosh and E. R. Novotelnov. —p. 150.
*Experimental Control of Growth of Malignant Tumors. I. N. Nikolsky. —p. 156.
Effect of Roentgen Rays, Radium and Radon on Botelho's Reaction. M. Finkelstein.—p. 159.
*Autohemotherapy in Inoperable Carcinoma. I. M. Grabchenko.—p. 169.
Roentgen Rays, Radium and Surgical Diathermy in Treatment of Carcinoma of Larynx. N. D. Hodyakov and S. F. Cheryachukin.—p. 172.
Primary Multiple Tumors: Two Cases. R. V. Goryainov.—p. 180.
Local and General Effect of Roentgen Therapy in Malignant Tumors. A. P. Lazarev.—p. 184.
Statistics on Carcinoma. A. M. Merkov.—p. 193.
Organization of Crusade Against Carcinoma in Rural Districts. S. V. Afanacev.—p. 209.

Effect of Roentgen Rays on Inorganic Phosphorus of Blood and Urine of Patients with Carcinoma.—Rivosh and Novotelnov studied the effect of roentgen rays and of radium therapy on the inorganic phosphorus content of the blood and of the urine of eighty-one patients with carcinoma, of whom fifty patients had carcinoma of the cervix of the uterus, twenty-nine had recurrences after the Wertheim operation and two had carcinoma of the ovary. Sixty patients were treated with roentgen rays and twenty-one with radium. All the patients had been put on the same standard diet before the treatment and during it. The blood and the urine were taken before the treatment and one, two and twenty-four hours after it. The phosphorus content was determined by Brigg's method. A normal phosphorus content was found in most of the patients before the treatment. In two hours after the treatment a steady increase in the phosphorus content of the urine and of the blood of all the patients (after some instability during the first hour after the treatment) was observed. In twenty-four hours the phosphorus content of the blood was still increased, but it returned to the normal level in the urine. The same results, but with a greater increase in the phosphorus content of the blood and of the urine, were obtained after roentgen and radium therapy in some patients with sarcoma, seminoma and lymphogranuloma. The sugar content determined simultaneously in the blood of all the patients with carcinoma changed always in the inverse proportion to the phosphorus content. This fact was in accordance with the supposed rôle of phosphorus in the intermediary metabolism of carbohydrates.

Experimental Control of Growth of Malignant Tumors.—Nikolsky reports on two interesting series of experiments on mice and rats, concerning the control of the growth of experimental malignant tumors by means of the elective deposit in the tissues of the tumors of certain dyes and metals injected intraperitoneally. The experiments were conducted mostly with the Flexner-Jobling carcinoma and a few with a sarcoma. On the principle of organotaxis, the tumors excised from the rats were triturated with sand in a mortar and mixed thoroughly with the dyes (trypan-blue) in one series of experiments (twenty-two rats and five mice) and with the colloidal lead or with the salts of selenium in the other series of fifteen rats. In the first series, after the intraperitoneal injection of the mixture of the triturated tumor tissue and the dye, an intense necrosis in the tumors of the rats and mice under experiment was observed and deposits of the particles of the dye were found in the interstitial tissue of the tumor, at the microscopic examination. In the second series the colloidal lead and the salts of selenium were injected intraperitoneally in the rats that had been inoculated with the Flexner-Jobling carcinoma from fifteen to thirty days previously. The experiments with the colloidal lead gave negative results; the metallic lead was precipitated at the admixture of the triturated tumor tissue to the colloidal lead, and the resulting mixture was inactive. But positive results were observed after the injections of the salts of selenium in one group of rats in which the injections of selenium were begun fifteen days after the inoculation of the carcinoma. At the time of the death of the control rats with tumors the size of a hen's egg, the size of the tumors in the rats in which the selenium was injected was not more than that of an almond. In the second group of rats, in which injections of selenium were begun twenty days after the inoculation of the carcinoma, the tumors continued to grow rapidly in the control rats, whereas in the rats receiving selenium the tumors were gradually disappearing and were being replaced by pure granulations. In the third group of the rats, in which the injections of selenium were begun one month after the inoculation of the carcinoma, the tumors in the control rats continued to grow and caused the death of the rats, whereas the tumors in the rats receiving selenium disappeared completely, and the rats lived.

Autohemotherapy in Inoperable Carcinoma.—Grabchenko tried autohemotherapy in fifty-eight patients with inoperable carcinoma, mostly of the esophagus and of the stomach. Ten cubic centimeters of blood was secured from the ulnar vein and injected intramuscularly to the same patient every other day. Three series of ten injections each, were administered at intervals of two weeks and were repeated, if needed, in two months. A striking improvement in the general condition of most of the patients was observed, with the disappearance of the pain, the return of the appetite and an increase in the weight. The passage of food in the patients with carcinoma of the esophagus was considerably improved, and in some patients with accessible tumors a decrease in the size of the tumors was observed. No cure was effected but the improvement lasted in some patients from a year and a half to two years.

Voprosy Pediatrii i Pedologii, Leningrad

1: 337-535, 1930

*Glycemia in Jaundice and Congenital Syphilis in the New-Born. A. V. Popova.—p. 347.
Intestinal Function in Acute Hemorrhagic Colitis in Children. E. V. Neshel and B. F. Shagan.—p. 362.
Irradiation of Nursing Mothers. M. V. Miller.—p. 370.
Blood Changes in Children Vaccinated Against Scarlet Fever. A. G. Ivanova.—p. 378.
*Effect of Epinephrine and of Pilocarpine on Dick Test. E. Rubel.—p. 405.
Scarlet Fever in Infants. K. I. Sokolova and A. A. Markova.—p. 414.
Hemo-Agglutination in Children with Scarlet Fever. V. P. Rovinsky and M. S. Guchinskaya.—p. 430.
Measles in Infants. M. M. Zimbal and D. A. Kuritzina.—p. 436.
New Model of Stop-Cock to Parnas' Apparatus for Determination of Ammonia in Blood. A. D. Holopov.—p. 453.
Rôle of Pedology in Institutions for Children with Chronic Diseases. R. S. Sominskaya.—p. 457.
Variability of Index of Nutrition in Nurslings. O. G. Panteleeva.—p. 467.
Incidence of Stillbirths and Death Rate of the New-Born. B. P. Fomenko.—p. 479.
Childrens' Death Rate in Leningrad in 1928. V. V. Paevsky.—p. 491.

Glycemia in Jaundice and in Congenital Syphilis in the New-Born.—Popova made repeated determinations of the sugar content of the blood of normal new-born infants aged

from 4 to 27 hours, in infants with jaundice and in infants with congenital syphilis. The sugar content was below 0.07 per cent in the blood of most of the normal new-born. However, a sugar content as low as 0.05 and 0.045 per cent did not influence the general condition and the development of the new-born and it usually rose to the normal percentage in several days after birth. Fifty per cent of the new-born developed a normal glycemic reaction (a moderate rise of a short duration of the sugar in the blood and a gradual but rapid return to the previous level) after the administration to them of dextrose solution (2 Gm. per kilogram of weight). Only the new-born with asphyxia and the ones who later developed jaundice reacted by a hyperglycemia. In the infants with jaundice a marked hyperglycemia was usually observed (in five infants there was as much as 0.3 per cent of sugar in the blood) and a hyperglycemic type of reaction after the administration to them of a dextrose solution. A similar hyperglycemia and the identical marked hyperglycemic reaction after the administration of the dextrose solution was observed in twelve babies with congenital syphilis. A sudden marked increase in the sugar in the blood, sometimes in two waves, after the administration of the dextrose solution, the long duration of the resulting marked hyperglycemia and a slow return of the sugar content in the blood to the previous level made it possible to plot curves that were characteristic for functional insufficiency of the liver. This and the similarity of the glycemic reactions in the infants with jaundice and in the ones with congenital syphilis made the author think that jaundice in the new-born could be considered as a symptom of a functional insufficiency of the liver, or rather of the liver and the spleen, the whole reticulo-endothelial system being involved in the production of the bile pigments, according to Wipple. In infants with doubtful congenital syphilis or a doubtful Wassermann reaction, the plotting of the glycemic curves after the administration to them of a dextrose solution may be helpful in the diagnosis of congenital syphilis.

Effect of Epinephrine and of Pilocarpine on Dick Test.—Rubel studied the effect of vagotropic and of sympathicotropic drugs on the Dick test in seventy-eight children with scarlet fever (from one to five weeks after the onset of the scarlet fever). Simultaneously with a regular Dick test each child was given two additional tests with a mixture of the toxin with pilocarpine or with epinephrine solutions. Neither the age nor the mildness or the severity of the scarlet fever or of its complications influenced the test. During the first two weeks after the onset of scarlet fever the Dick test and both its modifications were almost constantly positive, with the maximum reaction after the use of the mixture of the toxin and pilocarpine and with the minimum reaction after the use of the mixture of the toxin and epinephrine. During the following three weeks the percentage of the positive tests gradually decreased. The negative reaction was observed first after the use of the mixture of the toxin and epinephrine, whereas the reaction after the use of the mixture of the toxin and pilocarpine became negative the last. These differences in the intensity of the reaction and in its persistence after the use of pilocarpine and epinephrine in the Dick test reveal the vagotonic or the sympathicotonic state of the sympathetic nervous system and show that the Dick test may be used for other purposes than to measure the immunity of the patients.

Bibliotek for Læger, Copenhagen

122: 423-470 (Sept.) 1930

*Prognosis of Laryngeal Tuberculosis During Light Treatment. H. Videbech.—p. 423.

Sedimentation Test in Prognosis of Laryngeal Tuberculosis.—Videbech made 700 blood sedimentation tests in 108 patients with tuberculosis of the larynx and lungs and says that as an indication for prognosis the sedimentation reaction ranks with measurement of weight and stethoscopy and occasionally gives particularly useful information as a supplement to other clinical examinations. In thirty-six patients with laryngeal and pulmonary tuberculosis, parallel investigations on the sedimentation reaction and the relative leukocyte value according to Arneth-Schilling seemed to show considerable superiority in the blood picture over the sedimentation reaction for prognosis. The results of the blood examinations apparently support the conception that the nature of the pulmonary disease is of great significance in determining the prognosis of the laryngeal condition.

Hygiea, Stockholm

92: 657-704 (Sept. 15) 1930

*Blood Reservoirs and Blood Stability. Å. Berglund.—p. 677.

Blood Reservoirs and Blood Stability.—Berglund reports on investigations on the qualitative changes in the blood in the spleen and on the blood reservoirs, with especial attention to changes in the stability of the reserve blood.

92: 705-736 (Sept. 30) 1930

Transverse Section of Sheath of Rectus Muscle in Operations for Appendicitis, Especially in Women. A. Melander.—p. 724.
*Cicatricial Keloid of Unusual Extent and Tumor-Like Growth. G. Söderlund.—p. 730.

Cicatricial Keloid of Unusual Size.—In a cicatrix situated in the lateral aspect of the knee and measuring about 35 by 25 cm., Söderlund found a firm plate 3 or 4 cm. thick, with a tendency to extend beyond the cicatrix under the normal skin without infiltration. Excision was done. The pathologic-anatomic diagnosis was keloid. Examination half a year later did not show signs of recurrence.

92: 737-768 (Oct. 15) 1930

*Pulmonary Tuberculosis in the Aged. E. Forsgren.—p. 737.
Free Bodies in Elbow Joint and Their Origin. G. Söderlund.—p. 732.

Pulmonary Tuberculosis in the Aged.—Forsgren says that since old persons with open tuberculosis frequently are dangerous sources of infection, pulmonary tuberculosis should always be suspected in cases of bronchitis and cachexia in the aged and repeated examinations of the sputum should be made, together with roentgen examination of the lungs, if possible, when the bacteriologic results prove negative.

Ugeskrift for Læger, Copenhagen

92: 947-976 (Oct. 9) 1930

*Sex Hormones and Introduction into Therapy. E. Jarløv.—p. 947.
*Reliability of Aschheim-Zondek Reaction. H. C. A. Lassen.—p. 953.
Preparation and Standardization of Sex Hormones. K. Gad-Andresen and E. Jarløv.—p. 957.
*Cardiospasm: Treatment According to Plummer. A. Rischel.—p. 960.
*Positive Pirquet Reaction in First Three Years of Life. O. Lassen.—p. 962.
Terpinol Tablets as Cause of Continued Purulent Urethritis. A. Kristjansen.—p. 966.
Two Cases of Acute Appendicitis Presumably Due to Ascaris Lumbricoides. C. E. P. Buus.—p. 967.

Introduction of Sex Hormones into Therapy.—Jarløv says that with preparations available which are demonstrably effective, and whose effect can be measured in animals, the possibility for a rational therapy is open as soon as clinicians fix the evidently highly special indications and the therapeutic doses, which cannot be determined in advance on the basis of the effect on animals.

Reliability of Aschheim-Zondek Reaction.—In Lassen's material the reaction was positive in 98 per cent of the women known to be pregnant and negative in 99 per cent of those known not to be pregnant. In known pregnancy with negative outcome he suggests that the negative result may depend on the fact that the total volume of urine injected in some cases is too small and that a positive reaction would follow if the same amount of ether-extracted, concentrated urine should be used.

Cardiospasm: Treatment According to Plummer.—Rischel reports two of four cases in which good results were obtained by this method. In the one, with marked dilatation of the esophagus and constant retention, there was aggravation of the symptoms, leading to grave exhaustion, in spite of Plummer's treatment, but a repetition of the treatment gave good results. The second case, with considerable dilatation of the esophagus, illustrates the value of roentgen control of the location of Plummer's sound.

Positive Pirquet Reaction in First Three Years of Life.—Of Lassen's twelve patients with positive Pirquet reaction in the first three years of life, all presented more or less marked roentgen changes in the lungs, although only one showed anything abnormal on stethoscopy.